# Wind energy perceptions:

# The relevance of convention theory

# to social acceptability

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# Wind energy perceptions: The relevance of convention theory to social acceptability

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## Abstract

Wind energy is touted as the cheapest large-scale source of renewable energy. From wind's global potential of 60 TW-year/year, 10% are exploitable, which represents four times the global electricity consumption. Nonetheless, wind farms have brought controversy and conflicts to many of the communities in which they have been built. To understand this conflict, it is fundamental to comprehend the contradictive representations of wind energy held by developers and communities. The inability to establish shared common values around wind farms makes socio-economic coordination difficult to achieve.

This research investigates one socially contested wind farm in the community of Xavier in the Northeast region of Brazil. The objective is to discover how wind energy is represented by industry and community and assess how reducing the conflict could be achieved. This study will use Convention Theory (CT) to assess the symbolic representations of each group. To collect the data, 19 people in the chosen community were asked to participate in a focus group. In addition, three industry representatives were interviewed. Data was coded with the software MAXQDA to analyse the discourses from each group and framed it according to CT.

The results show relevant findings: the physical aspect of the wind farm is not relevant to Xavier and while the community focused on environmental justifications and the industry had a market-oriented perspective, civic justifications appear to be the shared common values through which social acceptability could improve. However, symbolism was not relevant. These results are discussed considering previous literature findings and the implications for future research.

**Keywords**: wind energy, social acceptability, convention theory, wind farm, representation, perceptions, Praia do Xavier, symbolism, industry, order of worth

## Abstrato

A energia eólica é considerada a fonte renovável mais barata em grande escala. Do potencial eólico global de 60 TW-ano/ano, 10% é explorável, o que representa quatro vezes o consumo global de eletricidade. Mesmo assim, parques eólicos são controversos e geraram conflitos em muitas das comunidades nas quais foram construídos. Para entender esse conflito é fundamental compreender as representações contraditórias da energia eólica entre indústria e comunidades. A inabilidade de se estabelecer valores comuns compartilhados em volta dela faz que a coordenação socioeconômica seja difícil de se alcançar.

Essa pesquisa investiga um parque eólico socialmente controverso na comunidade da Praia do Xavier, no Ceará. O objetivo é descobrir como a energia éólica é representada pela indústria e pela comunidade, e avaliar como se poderia reduzir o conflito. Esse estudo utiliza a Teoria das Convenções (CT) para examinar as representações simbólicas de cada grupo. Para coletar os dados, 18 pessoas na comunidade escolhida foram convidadas a participar de um grupo focal. Além disso, três representantes da indústria foram entrevistados. Os dados recolhidos foram codificados pelo software MAXQDA para mellhor analisar e comparar os discursos de cada grupo.

Os resultados encontrados foram relevantes: o aspect físico do parque eólico não parece ser significativo para Xavier, e enquanto a comunidade focou em justificativas ambientais e a indústria teve uma perspectiva voltado ao mercado, as justificativas cívicas parecem ser os valores comuns compartilhados pelos quais a aceitação social poderia melhorar. Porém, simbolismo não foi relevante. Esses resultados são discutidos considerando os resultados da literatura pregressae as suas implicações para pesquisas futuras.



**Palavras-chave:** energia eólica, aceitação social, teoria das convenções, parque eólico, representação, percepções, Praia do Xavier, simbolismo, indústria, ordem de valor

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# Chapter 1

# Introduction

This introduction has the objective to contextualise wind energy in the world and in Brazil. It also gives a brief overview of social acceptability issues and ends with the summary of the research's questions.

## 1.1 Wind Energy Global Context

Wind power is perhaps the most ancient form of energy used by mankind (Martin, 1997). However, only recently has it experienced large scale implementation - due to constant investment over the last few decades. Following the oil crisis in the 1970's and the subsequent rise in energy prices, wind energy's investment increased. Despite the reduction of capital flowing after the stabilisation of the market and decrease of oil prices in the late 1980's, wind energy has survived. Its implementation has seen steady increase since the technological advances in the 1990's which improved reliability as well as reduced the amount of cost per kWh (Redlinger, Andersen, & Morthorst, 2002).

The international political agenda also favoured the development of renewable sources of energy, including wind. The Brundtland Report of 1987 first came with a definition for the term "sustainable development". The Commission stated that non-renewable resources, such as fossil fuels should be regulated so that "the resource does not run out before acceptable substitutes are available" (UN, 1987, p. 43). As society became more aware of impacts of fossil fuel use, Environmental and Social Impact Assessments (ESIA), which refers to the effects of human actions on the environment, its ecosystems and on communities, became common policy tools (Morgan, 2012).

The UN Conference on Environment and Development of 1992 in Rio de Janeiro had strong support of developing and developed countries. One of the decisions reached by the Rio Summit was that alternative sources of energy would be the solution to global climate change, as they would be sought to replace fossil fuels (Biermann, 2013). This was supported by the Kyoto Protocol of 1997, which stipulated reductions of greenhouse gas (GHG) emissions to fight global warming. As a consequence, the GHG emission's market was created to aid some countries to achieve their goals (Almer & Winkler, 2017).

At the same time, the electricity industry underwent a massive restructuring worldwide. The electricity sector was privatised in many countries under neoliberal governments, including in

Brazil and New Zealand, which brought more competition to the market (Redlinger et al., 2002). However, wind energy's economic competitiveness was still dependent on government subsidies in most countries by in the 1990's. Feed-in tariffs – a policy to increase investment in renewables - soon became a major driving force of renewable electricity in many countries. The feed-in tariff guarantees generators a price for their power over a long period of time, thus accelerating the investment and development of such alternatives (Schaefer, Lloyd, & Stephenson, 2012).

By the year 2000, wind had become the fastest growing source of energy in the world, amongst renewables and non-renewables. From 1991 to 1997 it experienced an annual global growth in installed capacity of 22% (Redlinger et al., 2002). Due to its acceptance in the United States and most Western European countries, the global installed capacity also had a steady growth rate from 2001 to 2012, peaking at 36% in 2009. That year, the USA had the largest installed capacity and the global market for small wind turbines grew 50% (Stankovic, Campbell, & Harries, 2009). Figure 1.1 illustrates the annual increases in wind energy global capacity.

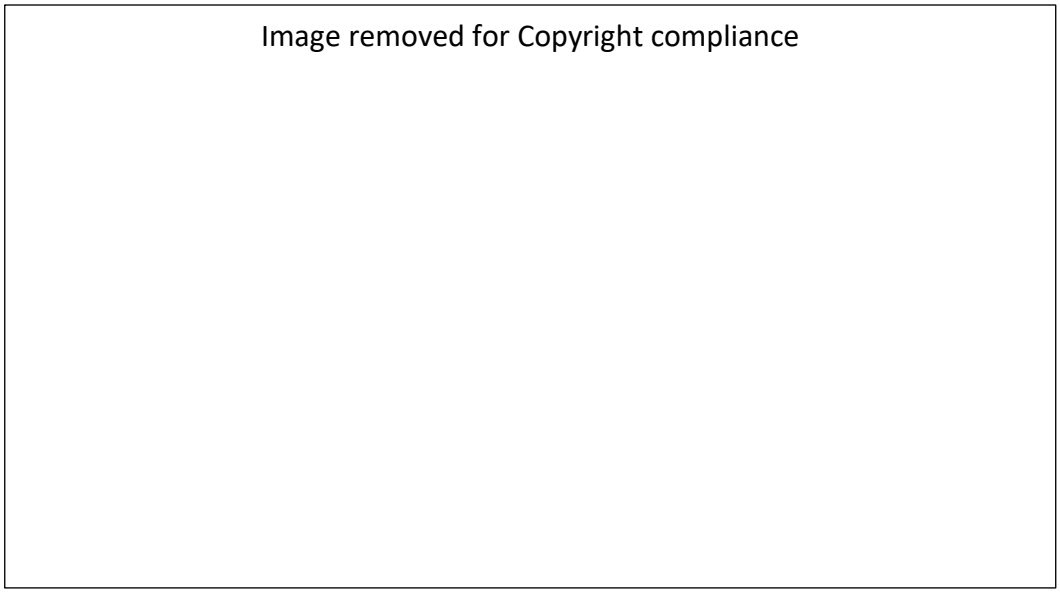


Figure 1.1. Annual increases in wind capacity (From World Energy Council, 2016, p. 4).

Recently, there has been an average of 33% growth per year between 2013 and 2015. Even though there was a decline in 2016, the global cumulative installed wind capacity grew more than 12% in that year. The main contribution came from China, which represented 42.7% of the new installed capacity in 2016 and has surpassed Germany and the USA as the country with the largest cumulative capacity (GWEC, 2017).

## 1.2 Wind Energy in Brazil

While in Denmark there is an overwhelming support for renewables, especially for wind energy (Loring, 2007), developing countries offer a different scenario. Brazil, for example, is gradually increasing installed wind energy going from 1.9 MW to 2.2 GW over the last decade (Pes et al., 2017). In 2017, Brazil's new installed capacity ranked 6$^{th}$ in the world (see Figure 1.2), while its cumulative capacity is ranked 8$^{th}$ (see Figure 1.3), which represents 2% of global installed capacity (GWEC, 2018). And there is still great potential for expansion (Amarante, Brower, Zack, Eolica, & Solutions, 2001).

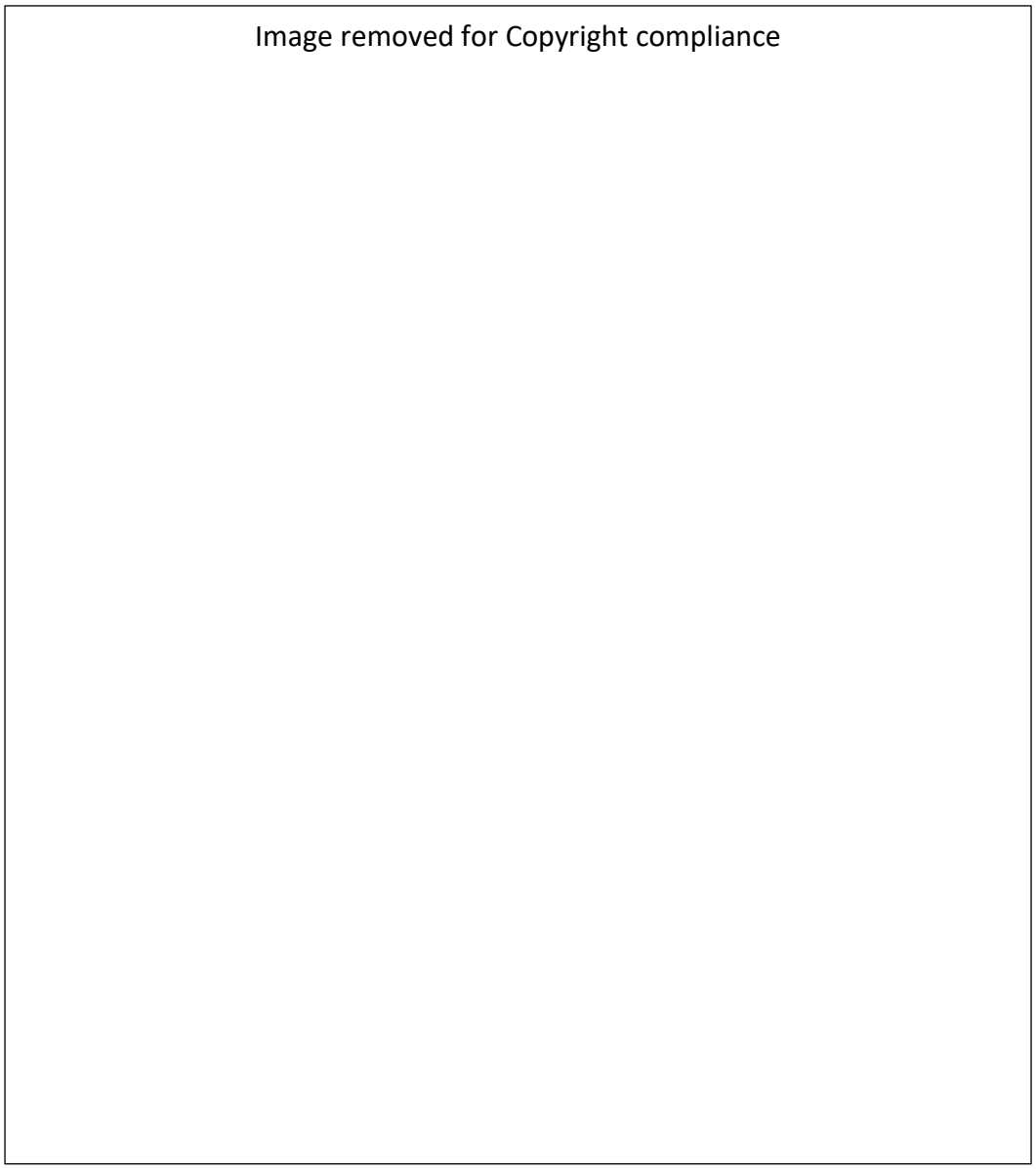


Figure 1.2.Top ten new installed wind energy capacity (From GWEC, 2018, p. 2).

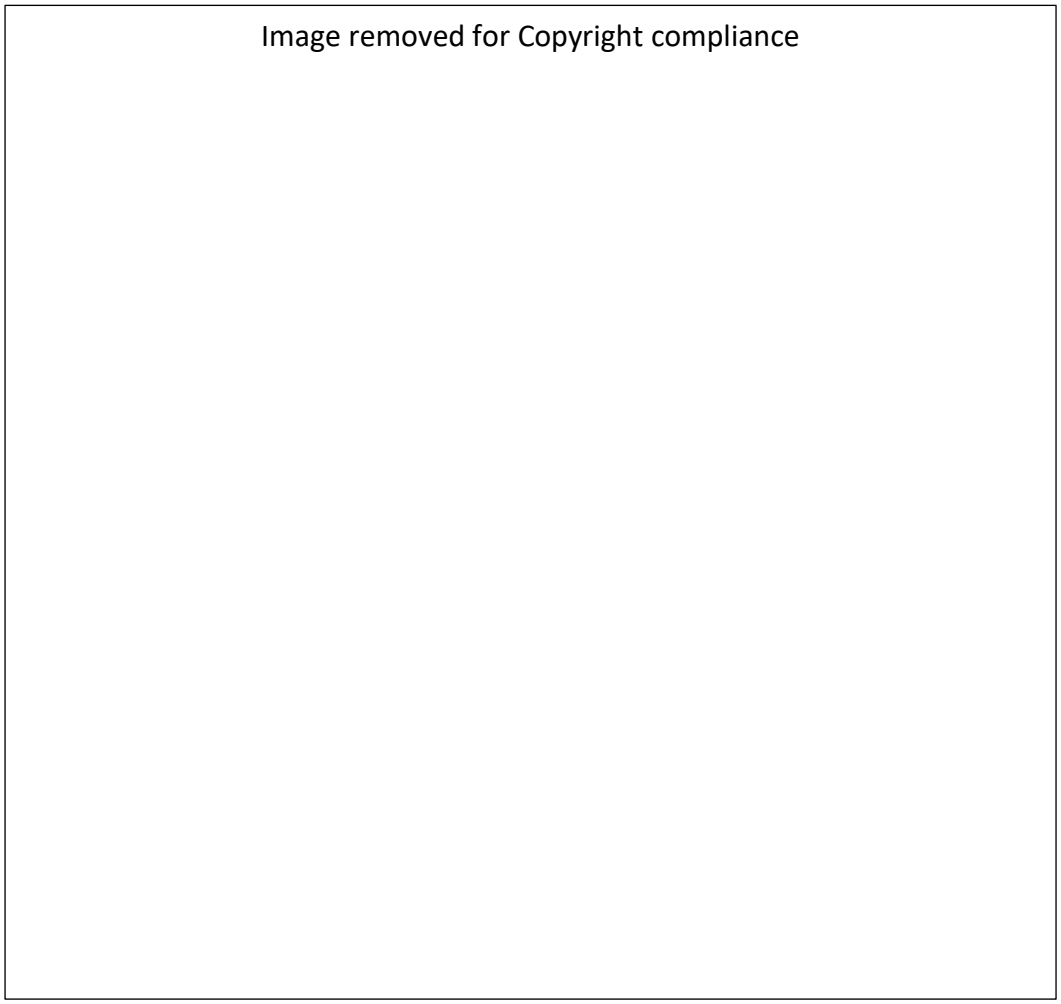


Figure 1.3. Top ten cumulative wind energy capacity (From GWEC, 2018, p. 2).

The expansion of Brazil's wind power comes through the support of the government. Every year energy auctions are organised by the government agency of energetic research (*Empresa de Pesquisa Energética*) to put forward energy projects. In these auctions, private companies bid their projects as an attempt to secure the development for themselves. In the latest auction for renewable energy projects in 2018, wind power had the largest offer of projects as well as the biggest proposed installed capacity. From the 1672 submitted projects adding over 48 GW of installed capacity, 931 projects and over 26 GW concerned wind energy developments (EPE, 2018).

The Northeast region of the country is where most of the wind farms are concentrated, even though the South region also has great potential (Brackmann & Martins, 2009; Martins, Guarnieri, & Pereira, 2008). The Northeast is also the poorest region of the country. Although there are more developed areas, there are several communities and minorities who depend on subsistence agriculture and grazing. Their situation is worsened due to the irregularity of rain and

the lack of government policies to develop the region (Carvalho, 1988; Hastenrath, 2012). A new development, like a wind farm, in theory, would be positive as it could help to develop the region economically. However, communities' acceptance has not always reflected that. The reason for this lack of support can be explained by several factors such as: the lack of community engagement and – in some cases – of corporate social responsibility programmes (Gorayeb & Brannstrom, 2016; Gorayeb, Mendes, et al., 2016; Porto, Finamore, & Ferreira, 2013). On the other hand, the South region has received large investments for wind energy in the last couple of decades, and some wind farms, such as the wind farm in Osório – which began its operations in 2007 with a 150 MW installed capacity (Enerfín, 2018) – have encountered public support: the community embraced wind farms because they perceived them as potential tourism attractions and an opportunity to diversify income (Bier & Verdum, 2015).

## 1.3 The Social Acceptability of Wind Farms

"Wind farms represent an opportunity for sustainable development of their surrounding communities" (González, Gonçalves, & Vasconcelos, 2017, p. 461). However, that has not always been the case. Communities and developers may perceive the development differently. While communities may see it as possibility for improved collective wellbeing, the developers might perceive it as a source of profit. This mismatch could be the first step towards social conflict. Communities may also be excluded from the decision-making process and may not receive any of the benefits from wind farms. These are some of the reasons why public acceptability has not always been easy to achieve (Brannstrom et al., 2017; García, Cherry, Kallbekken, & Torvanger, 2016; Leroy & Meireles, 2013).

The lack of social acceptability can impose several difficulties for the development, including its termination. This was the case with wind projects in the Otago region in New Zealand and in Tasmania, in Australia (Colvin, Witt, & Lacey, 2016; Spink, 2016). For that reason, developers have started to pay more attention to social demands. In Brazil, in the community of Praia do Xavier, which was studied by this research, wind energy developers have dealt with increasing levels of opposition due to the absence of a thorough ESIA (Loureiro, Gorayeb, & Brannstrom, 2015; Tavares, Leite, Durán, & Caetano, 2017). In 2009, the wind farm of "Praia Formosa" began its operations in the community with almost 105 MW installed capacity and almost no support from the local community (Mendes, 2016).

## 1.4 Research Questions

Although a large literature has investigated the impacts to communities of wind farms, this research will be the first to use Convention Theory (CT) as a framework of analysis. CT is a framework that investigates how society, communities or peoples justify things (Thevenot, Moody, & Lafaye, 2000). Its core assumption is that:

> *Economic value and worth have to be interpreted and constructed according to situations of economic coordination. Economic actors therefore rely on conventions as socio-cultural frames for mobilizing a shared interpretation of the objects, actions, goals, and collective intentions involved in situations of production, distribution, and consumption* (Diaz-Bone, 2016, p. 215).

Therefore, CT provides an appropriate framework for this investigation given that its cornerstone refers to the meaning and roles of conventions, which include symbolic aspects. CT approaches the interaction among rationality, values and coordination, arguing that rational actors can achieve coordination through shared common values (Patriotta, Gond, & Schultz, 2011).

This research uses CT to investigate how wind energy is represented by communities and developers. It must be noted that perceptions are a part of symbolic representations; however, thus far, most of the literature has focused on seven of the eight categories defined by Devine-Wright (2005) under which social perceptions of wind farms can be classified (physical, contextual, political & institutional, socio-economic, social & communicative, local, personal). The symbolic category still lacks understanding. Therefore, this research intends to use this factor allied to CT to investigate the relevance of both CT and symbolic representations to the social acceptability of wind farms; unveiling if developers and community have different perceptions of wind power – which could prevent them from achieving coordination and reducing conflict.

The community of Praia do Xavier, in the Northeast region of Brazil, is chosen as the case study of this research. The objective is to add knowledge to what has already been written about the situation in Xavier and to provide new insights, such as how to achieve coordination and how to improve social acceptability. CT has been mostly employed in economic studies, but could it be relevant in the study of social acceptability of wind farms? What is the relevance of symbolic representations to the social acceptability of wind farms? Could industry representatives and the community have different representations of wind power? Could these representations be related to how both groups understand and justify the wind farm? How could conflict be reduced? These are the questions this research intends to answer.

## 1.5 Chapter Summary

This chapter aimed to provide an overview of wind energy in the world and situate it as a growing industry in Brazil. In the light of the research questions proposed, Convention Theory will be used as a framework of analysis of the data gathered, which will be better explained in the methodology chapter. After this brief introduction of the topic of research, the following chapter will comprehend the literature review.

# Chapter 2

# Literature Review

This chapter provides a literature review on the subject of the thesis. It comprises the international literature as well as the literature regarding the case study of this research. The selected studies were chosen to give an overview of the issues around the social acceptability of wind farms both in Brazil and abroad. The selection criteria aimed at articles related to community engagement and ownership of wind farms, socially divisive wind farms in Brazil and abroad and positive and negative environmental and socioeconomic impacts of wind energy. The chapter starts reviewing the broader picture, contemplating the benefits and challenges of wind energy. The scope is then narrowed to wind energy's social acceptability. The framework to understand public perceptions of wind farms conceptualised by Devine-Wright (2005) is used as a guide to the remainder of the literature review. The following sections explain the reasons why wind farms are contested and give an insight on the development of wind farms in Brazil's Northeast region. The chapter ends focusing on the underrepresentation of the symbolic factor of wind farms and the gap in knowledge in the current literature.

## 2.1 Benefits from Wind Energy

### *2.1.1 Environmental*

Wind energy contributes to the reduction of carbon dioxide ($CO_2$) emission as well as in water consumption (Saidur, Rahim, Islam, & Solangi, 2011). Therefore, as a renewable source of energy, it is considered one of the solutions for the world's dependence on fossil fuels (Cottrell, Fortier, & Schlegelmilch, 2015; Escudero & López, 2008). . According to the 2014 report of the Intergovernmental Panel for Climate Change (IPCC), in 2010, almost 35% of greenhouse gas emissions came from the electricity sector (IPCC, 2014).

Additionally, wind energy can be a more sustainable alternative compared to other renewables. A hydroelectric, for instance, has to dam rivers and sometimes can also generate GHG emissions due to the decomposition of organic matter in areas where forests have been flooded to create the dams (Fearnside, 2006). Unsurprisingly, wind energy has gained recognition as a relevant contributor to environmental sustainability (Martins et al., 2008).

### *2.1.2 Economic*

One of the arguments in favour of wind energy developments is total economic benefits. First, wind can have the lowest cost per MWh of energy produced (see Figure 2.1). Other direct

economic benefits can include increase on employment, income and consumption, while indirect benefits can affect the transportation infrastructure and other services (Tegen, Goldberg, & Milligan, 2006). However, quantifying these economic benefits is often not precise.

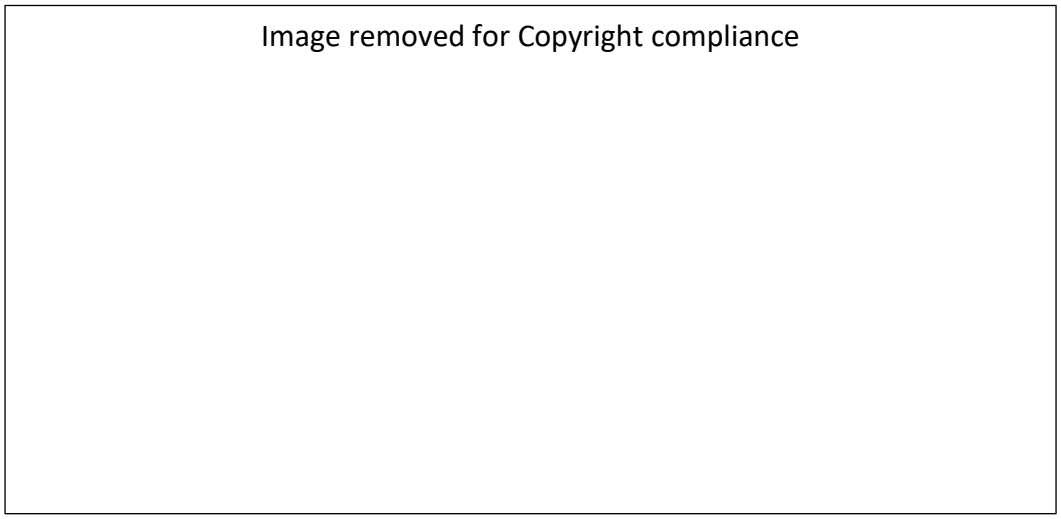


Figure 2.1. Comparison of unsubsidised cost per MWh of energy (From Lazard, 2017, p. 2)

Slattery, Lantz, and Johnson (2011), developed a tool in the United States to quantify these benefits.: the Jobs and Economic Development Impacts (JEDI) model in the United States. As such, this model became a tool for wind developers and policy makers in the US. It analyses local impacts associated with the construction of wind power plants through an input-output framework. Inputs include direct, indirect and induced effects on:

> *Employment, earnings and outputs (per million dollars change in final demand) and personal consumption expenditure (i.e., average consumer expenditures on good and services, calculated as a percentage for each industry and totalling 100% combined) for the 14 aggregated industries analysed […]: agriculture; construction; electrical equipment; fabricated metals; finance, insurance and real-estate; government; machinery; mining; other manufacturing; other services; professional services; retail trade; transportation, communication and public utilities; wholesale trade* (Tegen et al., 2006, p. 18) .

Therefore, it is possible to fully understand the positive economic impacts from wind energy as it provides objective proof that wind can be a source of income and jobs with a ripple effect on other industries. It could be argued that the JEDI model could be used as support for establishing shared (economic) values around wind energy to minimise contestation.

The building of wind farms has been known to have economic effects on real-estate values. Even though previous research shows no evidence as to the alteration of property prices in the

vicinities of wind farms, Bond (2010) surveyed one community in Denmark and discovered that people were willing to pay more for properties further away from wind turbines. This shows the importance not only of community benefits and public compensation, such as direct investments in public facilities and community-owned shares, but also of payments (Cowell, Bristow, & Munday, 2011). However, García et al. (2016) concluded that public compensation, such as public recreational facilities, is preferred over private.

Cowell et al. (2011) analysed if monetary compensation to the community for allowing the construction of a wind farm in their land meant greater acceptability. By performing interviews with authorities and consulting one community in Wales, they argued that public compensation follows an instrumental rationality, which means it is only used to achieve consensus around the wind farm development, while not aiming at social or environmental justice. Thus, it should not be the core policy of wind energy developers. However, compensation is not the only form of economic benefits. In fact, Slattery, Johnson, Swofford, and Pasqualetti (2012) used surveys in the USA to assess public attitudes to large-scale wind energy projects and discovered that socioeconomic factors, such as job creation, are more relevant than aesthetics. Moreover, Slattery et al. (2011) used the JEDI model to investigate local economic and social benefits from the construction of wind farms in Texas. Their results show that wind energy projects are only job intensive during the construction phase for it relates to turbine and supply chain. During the operations and maintenance phase, jobs can decrease and few economic benefits stay in the local community (Hofstaetter & Pessoa, 2015). In addition, the literature states that the creation of jobs from a single wind farm does not have a significant impact nationally (Redlinger et al., 2002).

### *2.1.3 Political*

Considering the political sphere, wind power could provide energy security (Stankovic et al., 2009). The European Union (UE), for instance, relies heavily on the import of fossil fuel – often from politically unstable countries. Wind energy could prevent price volatility and reduce the risks from such dependency (Krohn, Morthorst, & Awerbuch, 2009).

Another factor is the increased demand for energy sources that do not emit $CO_2$, be it wind, solar or nuclear (World Nuclear Association, 2017). The latter has spread across developed countries a few decades ago (De Groot, Steg, & Poortinga, 2013). Despite its many risks, from 1989 to 2014 five nuclear reactors have been constructed each year, and in the past three years 10 reactors per year (World Nuclear News, 2018). Wind energy could be a safer alternative for governments that are pressured to expand their energy matrix, but could not afford the risks brought about by nuclear

energy. Wind is also potentially cheaper than nuclear power, as in the case of offshore wind farms in the United Kingdom (Harrabin, 2017).

### *2.1.4 Social*

Support for wind energy is often associated with altruistic values (Bidwell, 2013). This would be in accordance with a few studies claiming that wind farms improve community spirit. Rogers, Simmons, Convery, and Weatherall (2008) used questionnaire surveys and semi-structured interviews to explore a community's response to a wind farm project. They discovered that the sense of community and conservation were enhanced, even though institutional support was required.

#### *2.1.4.1 Community engagement*

This sense of community can also be achieved by engaging the people in the process of developing a wind farm. Jami and Walsh (2017) examined five wind power plants in Ontario, Canada and discovered that collaborative approaches are expected to overcome public opposition, which can be inflated by the stakeholders' different perspectives and miscommunication. Their results also acknowledge the importance of a mediator to connect the stakeholders. To facilitate the acceptance of wind projects, Jami and Walsh (2016) formulated a framework which divides collaboration into pre, during and post-negotiation. However, not always has community engagement meant improved acceptance. In King Island, Australia, community engagement to a large wind energy project polarised opinions and led to social conflict. Colvin et al. (2016) interviewed the King Island's community and found that the project's failure can be attributed to premature engagement. Developers had not set all the details on the project, which contributed to uncertainty and speculation.

#### *2.1.4.2 Community ownership*

In developed countries, most notably in Germany and Denmark, the communities are often engaged in the decision-making (Fournis & Fortin, 2017). In Denmark, for instance, 40% of the country's electricity is generated with wind and 80% of the wind farms being locally-owned either by individuals or cooperatives (Krohn, 2003; Loring, 2007). In Denmark, people are engaged throughout the project. Therefore, community's needs are an integral part of the decision-making process. In addition, the implementation is incremental and there is continuous evaluation and feedback. Hence, it is possible to have improved local ownership and local accountability (Akroyd, 2003). This also incentivises empowerment in the community (Chambers, 1994). All these characteristics would be aligned with the establishment of a non-user-group approach to manage

the common property resource, such as a cooperative or a trust. It would centralise decision-making and management while at the same time facilitating commercial operations (Lyne & Collins, 2008).

Previous research and literature have targeted the topic of community ownership. Walker (2008) reviewed the experience in the United Kingdom (UK) to categorise different types of community ownership: cooperatives, community charities, development trusts and shares owned by a local organisation. Improved local income and regeneration of the neighbourhood would be amongst the positive effects, as well as reduced energy costs and reliable supply. It is widely accepted that community ownership can increase acceptance to wind energy projects and promote socioeconomic development, empowerment, and capacity-building (Cowell et al., 2011; Haggett & Aitken, 2015; Munday, Bristow, & Cowell, 2011; Walker & Devine-Wright, 2008). For that reason, the term 'community renewables' was coined by Warren and McFadyen (2010) after they surveyed two wind farm sites in Wales. Their conclusion was an improvement in community cohesion and a dissemination of a "strong sense of pride in and connection with 'their' wind farm project" (p. 209).

Ek and Persson (2014) conducted a choice experiment in Sweden to assess consumer preferences towards wind energy projects and discovered that higher fees on wind energy imposed by electricity companies to the population would be accepted if there was ownership – even if partial – and if planners and developers would engage dwellers in the planning process. However, there are risks and challenges when it comes to involving the community. The lack of financial capital, knowledge and skills would represent a higher risk (Haggett & Aitken, 2015). Berka, Harnmeijer, Roberts, Phimister, and Msika (2017) created a cost database for community-owned and commercial wind projects by analysing 20 developments in the UK. They discovered that pre-planning costs and risks are considerably larger for community-owned wind farms. This can translate to an increased difficulty in funding the project for example. For these reasons, one could ask how much ownership communities would be interested in. To answer this question, it must be discussed the dimensions of community ownership.

### *2.1.4.3 Community ownership dimensions*

Given the many interpretations of community ownership, Walker and Devine-Wright (2008) examined six community renewables projects in the UK to define what community-owned energy projects are. The authors interviewed policy-makers and created a database to establish two dimensions of community ownership: process and outcome. The process dimension refers to the developers and to whom is influential and participative. For instance, engaging the community in the decision-making process. Local dwellers must be involved in the process, there needs to be community engagement from the start of the development. However, simply engaging people in the

process does not guarantee acceptance. According to Colvin et al. (2016) the process itself must be objective and the project should have all its details set to avoid uncertainty and speculation. Moreover, the local context of each particular community must be considered to devise an engagement process that acknowledges all the different perspectives and voices.

Additionally, the outcome dimension is related to the spatial and social distributions of the outcomes. Benefits must positively affect and be shared by the whole community. Renewable energy projects can become locally divisive if benefits are not shared in the community. After investigating two wind farms in the UK, Walker, Devine-Wright, Hunter, High, and Evans (2010) argued that trust has a vital role for the acceptance and development of a project. The researchers found that when benefits are concentrated within a small group rather than being shared with the whole community, that leads to mistrust, social divisiveness and lack of support to the development.

A similar result was obtained by Hall, Hicks, Lane, and Wood (2017) when analysing benefit sharing arrangements in Australia. By using quantitative and qualitative methods of research, they found that establishing a sense of trust between wind farm proponents and the community and properly engaging the community early on the process were crucial for acceptance. One of the ways of doing that could be through partnerships with local contractors. Even though larger contractors are more likely to be involved in the process, efforts should be made to engage smaller and local contractors using local labour. In that sense, partnership with organisations could train and specialise the workforce, improving acceptance. They also found that face-to-face engagement is more likely to succeed. Therefore, more direct local involvement of people contributes to greater acceptance, which implies recognition of the benefits of renewables (Walker & Devine-Wright, 2008).

## 2.2 Challenges to Wind Energy

Despite the potential benefits, there are risks and challenges that can make the wind farm development arduous. Power and fuel costs are still subject to fluctuation. A steep drop in fuel price could make a large scale wind farm, or another renewable generation project, uneconomic as fossil fuel generation would be comparatively cheaper. The wind industry is dependent on constant technological advances in order to reduce the costs and attract more investments (Redlinger et al., 2002).

Developing countries have to overcome an additional set of challenges: a weak institutional and legal frameworks might hamper the chances of constructing wind farms. Likewise, a lack of transparency may increase the likelihood of corruption. Financially, there may not be sufficient credit to carry out such an endeavour. Additionally, unexpected currency devaluations might

condemn a developer to bankruptcy and political instability and labour unrest could make a project unviable (Redlinger et al., 2002).

### *2.2.1 Social acceptability as an issue*

Social acceptability means more than the simple acceptance of a given project. It is also related to territory and the practises, norms, culture within that space. Fournis and Fortin (2017) have defined social acceptability as:

> *The collective process of evaluation of a socio-technical project, which brings into interaction a plurality of actors, involved on different scales, and which stimulates the progressive construction of institutional arrangements and regulations recognised as legitimate because they are coherent with the vision of territory and model of development favoured within the relevant space* (p. 15).

Concerning wind farms, social acceptability has long been associated with the 'Not in My Back Yard' argument (NIMBY), meaning that people living closer to wind farms would not accept its presence. However, recent research has discarded this association (Devine-Wright, 2005). Bell, Gray, and Haggett (2005) used the literature to explain why there is a social gap – high wind energy support in polls, but also opposition to wind energy developments – and an individual gap – individual support for wind energy, but also opposition to a specific project. The authors conclude that lack of engagement in the decision-making process and of broad and unrestricted support from people can help explain these gaps. Even though self-interest is also argued to be an explanation, they claim that the NIMBY argument is excessively simplistic and does not consider the whole spectrum of human behaviour and its particularities. Devine-Wright (2005) also used the literature to review public perceptions of wind energy. The author concludes that NIMBY cannot explain all categories of perceptions under which wind energy can be classified. Warren and McFadyen (2010) surveyed two wind farms in south-west Scotland to study public attitudes towards wind developments. Their findings show that local residents approve wind farms, which is the opposite claim of the NIMBY argument. A similar result was obtained by García et al. (2016) when assessing the efficacy of alternative compensation mechanisms. Their method was a choice experiment survey in a community in Norway and their result showed that the proximity to wind farms did not have a significant impact in the contestation of wind farms.

Social perceptions of wind farms tend to be complex and multifaceted; therefore, instead of relying solely on the siting factor of NIMBY, Devine-Wright (2005) established eight categories under which social perceptions of wind energy can be classified: physical, contextual, political &

institutional, socio-economic, social & communicative, local, personal and symbolic & ideological. Physical refers to the turbine characteristics: its colour, size, acoustics. Contextual means the proximity to the turbines and the landscape aspects - if it is a mountainous land, close to the shore, etc. Political & institutional involves energy policies and local and national institutions. Socio-economic relates to who owns the shares and the implications of the ownership structure, while social & communicative regards how media and social connections influence public perceptions. Local refers to the sociocultural identity and to the degree of involvement of the community and the benefits that can be generated. Personal is individual-focused, for it concerns past experiences from specific people. Finally, symbolic & ideological mean the representation of wind power. The process of how a particular community will perceive wind power "includes 'how' wind farms are developed as much as 'what' is developed and how people come to make sense of the impact of an unfamiliar technology upon the places in which they live" (Devine-Wright, 2005, pp. 126-127).

Much of the previous research on the subject has focused on the first seven concepts. Slattery et al. (2012) used surveys to assess perceptions and attitudes towards wind energy in the USA and found that socioeconomic factors are more relevant for wind energy support than physical aspects. Stephenson and Ioannou (2010) reviewed the literature and empirical evidence to assess the acceptance of renewables in New Zealand. They found that siting is extremely important to social acceptance and issues such as the proximity of spiritual sites or that of urban perimeters must be considered. Their findings are aligned with the contextual and local categories. The study by Warren and McFadyen (2010) surveyed two wind farms in south-west Scotland, they found that social acceptability was enhanced due to a sense of connection – thus social bonds – triggered by community ownership. This research would be included in the social & communicative category. Schaefer et al. (2012) examined the acceptability of feed-in tariff for wind energy in New Zealand, thus focusing on the political & institutional factor. As it will be shown throughout the literature review, there is a lack of attention to the symbolic category.

### *2.2.2 Contestation of wind farms*

Despite wind energy's burgeoning political support, there are still controversies regarding its implementation. Portrayed as green energy which would substitute for coal and fossil fuels, wind farms also have socio-economic and environmental impacts, facing at times strong local opposition (Colvin et al., 2016; Ek & Persson, 2014).

The most common impacts are associated with the physical and contextual categories: the aesthetics, noise, and wildlife impacts due to the killing of birds (Bond, 2010; Stankovic et al., 2009). In terms of visual impacts, developers have a preference for the shore or on top of hills due

to stronger winds. However, such places are often perceived by communities as places of beauty where people can interact with nature in its purest form. Additionally, people use these places for recreational purposes. A wind farm could spoil these activities. Regarding the noise, the landscape can have features that can act as physical barriers to avoid the noise. However, a wind farm's noise level ranks lower than a car speeding at 65 km/h (see Table 2.1).

Table 2.1. Noise Levels (From Stankovic et al., 2009, p. 91).

| Source/Activity | Indicative noise level dBA | Human response |
|---|---|---|
| | 140 | Treshold of pain |
| Jet aircraft at250 m | 105 | |
| Shout (15cm) | 100 | Very annoying |
| Motorway traffic (15m) | 70 | Intrusive |
| Truck at 50 km/h at 100m | 65 | |
| Truck at 50 km/h at 100m | 55 | |
| Normal speech at 5m | 50 | Quiet |
| Wind farm at 350m | 35-45 | |
| Soft whisper at 5m | 30 | Very quiet |
| | 10 | Just audible |

Finally, the migratory routes of birds should be studied to prevent the erection of wind farms in their course. Despite being the most common impact cited by wind energy's opposition, studies show that a large scale wind farm is responsible for less than four bird deaths per year (Stankovic et al., 2009). Therefore, it is unlikely that migrating birds are significantly affected by wind farms.

To summarise some of the arguments for and against wind energy, Table 2.2 illustrates these topics, dividing them into economic, environmental, political and social issues.

Table 2.2 Arguments For and Against Wind Energy (From Stankovic et al., 2009, p. 29).

| | Arguments for | Arguments against |
|---|---|---|
| Economic | Creating new jobs;<br>Lower transmission costs. | Real-estate speculation;<br>Negative impacts on tourism? |
| Environmental | Low-pollution energy;<br>Reducing $CO_2$. | Local environmental impacts. |
| Political | Energy security;<br>Safer than nuclear energy? | Carbon capture and sequestration as a better alternative? |
| Social | Ownership;<br>Help build community spirit. | Local safety risks?<br>Damaging renewable energy reputation if badly designed and poorly considered. |

## 2.3 Inequalities and Power Dynamics

In Brazil, most wind farms are located in the Northeast (Santos, 2014) – the poorest region of the country (Carvalho, 1988) – and often they are near small poor communities which do not have the political capital to put forward their own interests. Pinheiro, Gomes, Nogueira, De Castro, and Meireles (2014) held community meetings and interviewed workers to assess the negative impacts from wind farms in the communities of Guagiru, Farol and Porto do Barco, fishing villages situated on the west coast of the state of Ceará. Their findings revealed that in a few settlements in the Brazilian Northeast, wind energy has impaired clam harvesting – a commercial and subsistence activity – due to increased soil erosion. Besides, due to the workers that came to build the wind farm and additional business that started to develop to accommodate the increased demand for services, property speculation became an issue. Finally, more houses also aggravated soil erosion.

Porto et al. (2013) reviewed the literature on wind energy projects in Brazil and found that in a few communities in Brazil's Northeastern region, wind farms have displaced native peoples whose land rights depended upon traditional claims, as a result of insecure tenure. Gorayeb and Brannstrom (2016) interviewed Praia do Xavier's community leaders to analyse wind energy policies in Brazil's Northeast. They found that people were not consulted, and the construction of wind farms disrupted the community's livelihoods. Large areas of land were privatised which denied the local fishing community access to the water, hence impairing their livelihoods (Porto et al., 2013). Mendes, Gorayeb, and Brannstrom (2016) investigated the issues and impacts on that community. The authors used participatory approaches which included surveys, observation and other

techniques to obtain a broad overview of the community's issues with the wind farm. The group consisted of 20 people and involvement was voluntary, meaning no type of participant selection was held. They found that the community had concerns regarding environmental degradation and noise, while also complaining about the lack of jobs and infrastructure. However, dwellers expressed optimism towards an increase of tourism. Additionally, the developments brought about by this wind energy endeavour – such as the electricity and the roads – served the wind farms, not the community. There were no public services; the electricity generated was directed for the national grid, and, ironically, some houses did not have electricity; and the roads had the sole purpose of creating access to the turbines, even prohibiting access for locals (Meireles, 2011). It was only after a legal dispute that dwellers gained the right of using the road, claiming they had already been using the site for transportation, fishing and recreational purposes before the development took place (Mendes et al., 2016). In Caetité, in the state of Bahia, in the Northeast region of Brazil, the wind farm complex impacted traditional African-indigenous communities. Common good resources were used by the companies, in other words, portions of land were privatised and access to water was restricted. Moreover, community leaders were pressed to sign contracts with companies, leading to internal conflicts (Porto et al., 2013).

## 2.4 Multiplicity of Perspectives

As exemplified in the Brazilian case, not always all stakeholders are engaged in wind energy developments. Freeman (2010) defined a stakeholder as "any group or individual who can affect or is affected by the achievement of the organisation's objectives" (p. 46). In wind energy projects, key stakeholders are the community in which the wind farms are being built and the developer. Understanding why each subject is important and how they are impacted is critical to problem-solving (Bryson, 2004). By doing so, it will not only be possible to identify the interests of all stakeholders, but also the opportunities as well as the potential conflicts and risks (Dearden, Jones, & Sartorius, 2002). In the example of Praia do Xavier, the community was negatively affected, and had low importance to and influence on the development (Mendes et al., 2016). As a result, people were against the wind farm (Gorayeb, Mendes, et al., 2016).

## 2.5 Subjectivity theory

Wind energy's acceptance – or not – by communities is complex and demands further support from social science. Subjectivity theory can provide further insight to the analysis of social acceptability. This theory analyses the relations and interdependence among politics, institutions and subjectivities., and argues that changes in subjectivities can be achieved through government

policies and institutions. In the Kumaon forest in India, for instance, the decentralisation of environmental regulation through community-based conservation raised awareness amongst local communities. By decentralising power and transferring decision-making to the community, a true sense of ownership would be seeded in people's hearts and minds (Agrawal, 2005). This would be aligned with Foucauldian conceptualisations of the decentralisation of power as defined by Oels (2005):

> *It can no longer be assumed that the location of power rests with the sovereign, but instead one needs to investigate the many technologies and practices, fields of knowledge, fields of visibility and forms of identity that constitute a ruler with certain powers. […] This implies that government is not limited to the state but can be exercised at all levels of society, namely as government of the self, government of the family and government of the state* (p. 188).

It can be argued that changes in policies regarding wind energy, such as rules enforcing engagement, can change subjectivities, similar to what happened in the Kumaon forest. For instance, community-ownership may introduce the ideas of energy awareness and sustainability in the community, hence increasing acceptance to wind energy (Schaefer et al., 2012). However, according to Winkel (2012), the State has used green justifications – such as climate change or environmental degradation – to avoid the empowerment of local communities by legitimising state intervention This is a good example of how different justifications can generate conflict. A similar point could be argued in respect of wind farms: the State can use green justifications – the sustainable characteristic of renewables – to put forward wind energy developments even if they are a threat to vulnerable communities.

## 2.6 Symbolism

After reviewing the literature, one category of social perceptions of wind farms is arguably underrepresented: the symbolism. In one of the few studies regarding the symbolism of wind energy, Lee, Wren, and Hickman (1989) surveyed seven wind farms in the UK and discovered that the majority of the respondents who had positive attitudes towards wind energy recognised the wind farms as symbolising progress. According to Devine-Wright (2005), public perceptions of wind farms are related to "place identification processes such as continuity with the past" (p. 129). This is particularly relevant in the fishing village of Xavier, which is, according to Brazilian legislation, defined as a 'traditional community'. This means their unique culture and social organisation are shaped according to the territory and its resources. In addition, they are characterised by the collective use of land, instead of private ownership (Gorayeb, Brannstrom, de Sousa Mendes, & de

Andrade Meireles, 2016). Meireles, Gorayeb, Lima, and Silva (2015) analysed the social and environmental impacts of wind power in traditional communities in Ceará, Brazil, through digital mapping and observation, and discovered that social identity is directly connected to territory. For this reason, severe changes on the land might symbolise something beyond the perceived local impacts. The community of Praia do Xavier might symbolise the wind farm as a threat to their identity or as an intruder in their community. Additionally, because the community was not involved in the decision-making, their symbolic representations of the wind farm might indicate fear of the unknown.

## 2.7 Gap in Knowledge

In Brazil, previous research in Praia do Xavier has put the community on the radar concerning the issue of social acceptability of wind farms; however, all of them have focused on some of the previously explained categories of social perceptions of wind farms. Mendes et al. (2016) emphasised the physical aspects of wind farms affecting the community's quality of life. Mendes (2016) approached the contextual category as a source of conflict in the community. Gorayeb, Brannstrom, et al. (2016) highlighted the socio-economic category when discussing the mitigation measures implemented by the developer. The symbolic category is underrepresented by previous research, so this investigation examines if symbolism is relevant to the study of social acceptability of wind farms. Additionally, this study aims to analyse both the community's and the industry's perspectives. For that reason, CT is used to examine their justifications and discover which is the common ground between both parties. By comparing how both groups perceive and justify wind farms, this research investigates how conflict between Xavier and developers could be reduced.

## 2.8 Chapter Summary

This chapter presented the literature review. Arguments for and against wind energy were explained as well as the issue of social acceptability. Many researches have made a link between community engagement and ownership and social acceptability, although there are conflicting findings and contextual differences between developed and developing countries may be a factor. The framework established by Devine-Wright (2005) was used to guide the literature review and provide an insight to the lack of study of the symbolic factor of wind farms. Following this review of the recent literature, the next chapter will present the research setting.

# Chapter 3

# Research Setting

This chapter provides an overview of the community selected for this research, presenting context and rationale for its setting. This chapter encompasses four sections: the community's geographical location, its population, economic and social characteristics, the context and the justification for the study.

## 3.1 Location

This research focused on one community in Brazil: Praia do Xavier, in the district of Amarelas, municipality of Camocim, located in the state of Ceará, in the Northeast region of the country (see Figure 3.1). Ceará is "Latin America's largest state for wind energy […] with 520 MW of operational capacity" (Brown, 2011, p. 344) The community of Xavier is located on the extreme west of Camocim, between the sand dunes and the beach. The wind farm was built within a few hundred meters of some of the community's houses (see Figure 3.2).


Figure 3.1. Map of Ceará (From do Nascimento Junior, Tossi, de Oliveira, & de Lucena, 2017, p. 26).

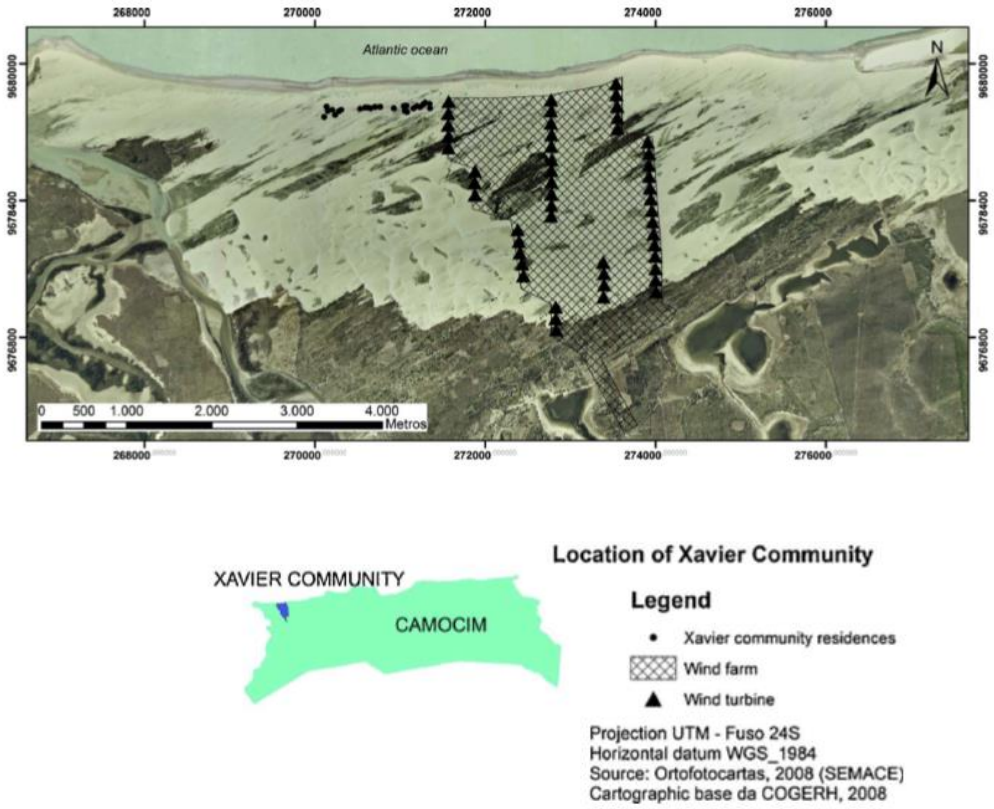


Figure 3.2. Praia do Xavier location (From Gorayeb, Brannstrom, de Andrade Meireles, & de Sousa Mendes, 2018, p. 84).

## 3.2 Characteristics

The community of Xavier is composed of 66 inhabitants (20 families), of which 43.9% are women and 56.1% are men. Additionally, 24% are considered to be illiterate, while 51% have not completed high school. There are no schools in the community, so the children need to go to school in the district of Amarelas. The limited access to the community create difficulties not only for the children's attendance at school, but also the inhabitant's medical monitoring. There is no health infrastructure, no basic sanitation and no collection of the rubbish (Mendes et al., 2016). All these factors represent health and environmental conditions at the community (Lahoz & Duarte, 2015; Moe & Rheingans, 2006).

Praia do Xavier is also characterised as being a traditional community. This means they are culturally distinguished from the rest of the country: their culture and traditions are intimately related to the space they occupy and their socio-economic activities (Brandão & Leal, 2012). In Praia do Xavier, this space includes the ocean, the dunes, the interdunal lagoons, the river and the surrounding fauna and flora. Their livelihoods are also dependant on the environment (Evangelista, Leite, de Souza, & Gorayeb, 2016; Tavares et al., 2017). Their economic activities comprise extractive

undertakings, such as fishing and gathering shellfish (Mendes, 2016). Therefore, the decree number 6040 of 7th of February 2007 established that Praia do Xavier would be legally classified as a traditional community in Brazil (Evangelista et al., 2016; Mendes et al., 2016). This does not mean Praia do Xavier have special protection, but that their identity is recognised and their rights as civilians are secured (Brandão & Borges, 2012).

As a traditional community, Xavier's inhabitants did not – at the time of the construction of the wind farm – possess land title (Rebouças, 2009) that would have guaranteed their right to lease the land and reap the benefits of a proper land market (Lyne & Collins, 2008). This sheds a light on one of the problems the community faces: the open access nature of the surrounding environment. Despite the existence of customary boundaries, land tenure is not secure.

## 3.3 Context

In 2009, the Praia Formosa wind farm was erected. It had a capacity of 104.4 MW given its 50 turbines in an area of 1040 hectares (Mendes, 2016). Consequently, part of the area of the community was occupied by the wind farm. This was made possible by the role of local elites acting "within the licensing process with the ability to magnify procedural and distributive injustices" (Gorayeb et al., 2018, p. 86). In other words, local elites forged legal documents to claim they owned the land. Therefore, they negotiated with developers the conditions under which the wind farm would be built and the community of Praia do Xavier was completely excluded from negotiations. In 2009, not only Xavier, but also the municipality of Camocim criticised the development. Amongst the complaints was the fact that it generated neither energy nor revenues to the town as well as the blockage of the rain water flow, which affected some localities of Camocim (Fernandes, 2009; Rebouças, 2009).

During the construction of the wind farm, sand dunes were flattened causing the disappearance of food gathering sites. Additionally, large portions of land were privatised, denying the community access to fishing areas (Brannstrom et al., 2017; Gorayeb, Mendes, et al., 2016). The erection of the wind turbines meant that sand dunes and seasonal interdunal lakes (see Figure 3.3) were embanked (see Figure 3.4). This compromised the community's food security (Tavares et al., 2017). In addition, the construction of access roads (see Figure 3.5) not only cut through moving and fixed sand dunes, but also deforested mangroves, resulting in loss of habitats (Meireles, 2011).

Regarding the physical category of social perceptions of wind farms, one perceived impact regarded the loss in quality of life due to the noise, which caused insomnia for some (Mendes et al., 2016). On the other hand, the contextual category is given emphasis by other research due to an accident that happened in 2009: one of the turbines exploded and all houses were evacuated and

people told to wait in the water overnight. This lead many in the community to state they lived in constant fear of new accidents. This fear was directly connected to the fact that the wind farm is too close to the community (Meireles, Gorayeb, da Silva, & de Lima, 2013; Mendes, 2016; Mendes et al., 2016).

Image removed for Copyright compliance

Figure 3.3. Interdunal lagoon in Xavier (From Trip Suggest, 2014).

Figure 3.4. Wind farm in Xavier, 17.02.2018 (Photo Credit: Victor Pitanga).

Figure 3.5. Road Access to Praia do Xavier, 17.02.2018 (Photo Credit: Victor Pitanga).

According to Gorayeb et al. (2018), conflicts had initially arisen through “cartographic and physical erasure” (p. 83), which happens when proponents exclude the community from the map, altering the name of the locality and changing its geographical characteristics. Praia do Xavier became Praia Formosa. This helped underrepresent the impacts, leading to a simplified Environmental Impact Assessment. Amongst the complaints of the community were:

- No electricity generated to the community;
- No revenues to the local government;
- Environmental damages;
- Deteriorated access to the community;
- No benefits to the community from the leasing of the land (Fernandes, 2009; Rebouças, 2009).

Mitigation policies in Xavier only occurred after the community started legal action with the public prosecutor to have their rights recognised (Meireles et al., 2015). Mitigation consisted of monetary compensation, which the families used for the construction of brick houses (see Figure 3.6), which replaced the old daub houses (see Figure 3.7). However, this has led to other impacts,

such as the interest on privatising land – and potentially real-estate speculation – as some families showed interest in selling their former house (Gorayeb et al., 2018). Previous research has linked the economic compensation to improved levels of acceptability (Brannstrom et al., 2017; Gorayeb & Brannstrom, 2016). This highlights the socio-economic category of social perceptions of wind farms. After the legal action, children were given access through the wind farm to go to school, educational programs for women and children were implemented and electricity was supplied to the families. All of these would fell under the local category, which emphasises the benefits that can be created by wind farms (Devine-Wright, 2005).

Figure 3.6. Brick house in Praia do Xavier funded by the wind energy developer, 16.02.2018 (Photo Credit: Victor Pitanga).

Figure 3.7. Daub house in Praia do Xavier, 16.02.2018 (Photo Credit: Victor Pitanga).

## 3.4 Justification to Study Praia do Xavier

The case of Praia do Xavier is an example of top-down approaches and marginalisation processes that are common in developing countries and contribute to impacts (Gorayeb et al., 2018). Additionally, the community's remote location in the country means their political interests are not heard elsewhere in the country. As a traditional community, their bonds with the local environment are a part of their culture and social identification. These characteristics were deeply altered by the construction of the wind farm (Evangelista et al., 2016; Mendes, 2016). However, previous research has not been clear on whether their socio-cultural identity might have been affected by the wind farm. For this reason, this research investigates if their symbolic representations of the wind farm might indicate their intrinsic contestation of the development as it could represent a threat to their identity. By analysing discourses within CT, this research provides a different perspective that adds important data to the existing literature. For the first time, the point of view of Praia do Xavier is compared to that of the industry. Additionally, this study intends to contribute to the improvement of social acceptability by understanding how the actors' behaviours could be coordinated.

## 3.5 Chapter Summary

The purpose of this chapter was to provide context and justification for the research setting. Since the beginning of the wind farm's operations back in 2009, practises, such as cartographic and physical erasure, have aggravated the low social acceptability and the negative impacts, which included damages to the local environment. After this brief contextualisation of the setting, the following chapter will explain the methodological approach of the research.

# Chapter 4

# Methodology

This chapter has two main purposes: to explain the core assumptions of Convention Theory and understand how they would be connected to symbolism as well as to detail the methods used to conduct the research. To collect the data, a qualitative method was chosen: a focus group in the community of Praia do Xavier was held and three interviews with industry representatives were conducted. The data was analysed with the software MAXQDA and it was arranged according to the CT framework. Finally, a second analysis was conducted based on the Devine-Wright (2005) summary of factors for understanding public perceptions of wind farms and additional codes were created to accommodate aspects that did not fit either one of the frameworks. Therefore, this chapter is divided in three sections: the explanation of CT, the methods used and the data analysis.

## 4.1 Convention Theory

This research focused on CT – also known as *Economies des Conventions* in French – which originated in France in the late 1980's. The cornerstone of this theory refers to the meaning and roles of conventions, which are deemed to facilitate social interaction as shared understandings on how to behave. Conventions can also be differentiated, according to Miller (2008), based on the type of interaction involved as either general and specific conventions. The former can be seen as guides to social interaction if they are commonly known and adopted. For one to use a convention, it is necessary to trust that everybody else is also adopting it. In that sense, a general convention coordinates expectations and is "a solution to coordination problems" (Favereau, 2008, p. 116). Once followed, subjects repeat it consistently, which make behaviours predictable. For instance, wearing a suit and tie to work is a commonly known and adopted norm amongst lawyers. Acting against such convention cannot be made individually, even if one thinks that wearing these clothes are irrelevant to one's performance. By contrast, specific conventions are an "arbitrary but stable social regularit[ies]" which creates "stable solutions to a specific type of coordination game" (Miller, 2008, p. 327). In Brazil, an example of a specific convention would be the accepted norm of leaving a 10% tip at restaurants for the waiter, while in New Zealand there is no such convention.

Convention Theory draws its theoretical framework from the interaction among rationality, values and coordination. Facing uncertainty, actors, as rational beings, will rely on the coordinating role of values to achieve cooperation (Favereau, 1989). These values are grouped under different conventions, and actors are deemed capable of selecting which convention to use for each situation. In this research, coordination between the actors – wind farm developer and community – involves

the collaboration and predictable pattern of behaviour that allows stable social regularity and diminishes conflict. In other words, it is the means for realising social acceptability.

Unlike neoclassical economics, which relies on economic rationality, CT's cornerstone is interpretative rationality: situations and objects are interpreted through social-cultural frames and have values attached to them. Therefore, rationality not only mobilises individual resources and interests (economic rationality as encompassed by the Devine-Wright (2005) socio-economic category of social perceptions of wind farms), but also can be supported by collective experiences brought about by rules and other instruments, which are only effective if they are stable and if actors do not doubt their legitimacy. Thus, conventions are collective cognitive instruments (Reynaud & Richebé, 2007). Conventions, therefore, rely on symbolic representations of social groups. The symbolism of a given action is what shapes conventions. In the example given before, lawyers follow the convention of wearing suit and a tie to work. Behind this convention, there is a symbolic factor. Perhaps it symbolises power or maybe tradition. Symbolism allows coordination and cooperation. The former dictates the interpretation of economic value (Diaz-Bone, 2016).

When disputes emerged, actors could rely on different orders of justifications – also known within Convention Theory as orders of worth – to obtain legitimacy (Boltanski & Thévenot, 1991). Favereau and Lazega (2002), Salais, Thévenot, Boyer, and Silvestre (1986), amongst others classified the orders of worth into six categories: 'market performance', 'industrial efficiency', 'civic equality', 'domestic relations', 'inspiration' and 'fame', although an order of green worth was later incorporated (Lafaye & Thévenot, 1993; Latour, 1998; Thevenot et al., 2000). These justifications "refer to recognised political philosophies (those of Adam Smith, Saint-Simon, Rousseau, Bossuet, Augustine and Hobbes, respectively)" (Rosin & Campbell, 2009, p. 37).

The order of market worth refers to a monetary form of evaluation, in other words, price, cost, profitability and so on. Individuals and objects are categorised in economic terms (Thevenot et al., 2000). Considering a wind farm development, the order of market worth would include the relative cost of the project and its profitability as well as its economic value to the society.

The order of industrial worth considers the technical aspects of industrial affairs. In this case, statistics are used to evaluate efficiency on projects (Thévenot, 2002). A company building a wind farm, for instance, would use this world of justification to appraise the construction process and evaluate the efficiency regarding the size of the wind turbines, the shapes of the blades, the location of the wind farm – whether being on the shore or on the top of hills will improve its efficiency – and so forth.

The order of civic worth, on the other hand, focus on the social side. Collective welfare is the form of assessment and equality is the measurement of analysis. The argument that a wind farm would provide more accessible and reliable electricity would be included in the civic convention. Similarly, if the company erecting the wind farm also implements corporate social responsibility projects in the neighbouring community, such as waste management, gender inclusion programmes, and so forth, the civic order of worth would be the convention used.

The order of domestic worth focuses on the social interactions and evaluates reputation. Hierarchy, heritage and patrimony are the qualified objects, and unlike the civic, there is no need to formality (Thevenot et al., 2000). The community nearby the wind farm development, for instance, has its traditions and leaders as well as relations with other surrounding communities – just like families have their habits and rituals (like having dinner together), authority figures (the parents or grandparents) and relations with other family members (distant cousins). In both cases, conventions are passed orally. Such relationships are the cornerstone of traditional and indigenous communities. Therefore, developing a wind farm that ignores the community leaders or the chief of the tribe or the community's traditions, for instance, could translate to lack of acceptance.

The inspired order of worth is observed through passion and has grace as a method of evaluation. The qualified object of this order of worth is something intangible as it is more related to emotions. Workers from the wind energy company who feel proud of contributing to the global environment are using the inspired category. If local workers are employed, they might be affected by this feeling and evaluate the wind farm in a more subjective, emotional way.

Actors use the order of renown worth when fame is the method of appraisal used to attest recognition. Qualified individuals are celebrities, while the media and advertisements are the objects (Thevenot et al., 2000). The wind energy developer focuses on this order when they release commercials on the internet or television or radio, etc. to advertise their accomplishments. By doing so, developers use their recognition as a means to justifying the wind farm.

Finally, the inclusion of the green order of worth, according to Thevenot et al. (2000), was due to the global environmental agenda, reflecting ecological principles and focusing not only on mankind and future generations, but also on "non-human entities" (p. 257). Wind power as a renewable source of energy involves environmental and ecological aspects. By evaluating the reduction of $CO_2$ emissions because of the implementation of wind energy, one would be using the order of green worth. Additionally, a developer that completes a thorough Environmental Impact Assessment (EIA) and implements measures to mitigate potential environmental effects are using environmental forms of evaluation. Reforestation programmes would be an example.

Table 4.1. Summary of Orders of Worth (From Thevenot et al., 2000, p. 241).

| | Market | Industrial | Civic | Domestic | Inspired | Opinion | Green |
|---|---|---|---|---|---|---|---|
| Mode of evaluation (worth) | Price, cost | Technical efficiency | Collective welfare | Esteem, reputation | Grace singularity creativeness | Renown, fame | Environmental friendliness |
| Test | Market competitiveness | Competence, reliability, planning | Equality and solidarity | Trustiness | Passion, enthusiasm | Popularity, audience, recognition | Sustainability, renewability |
| Form of relevant proof | Monetary | Measurable: criteria, statistics | Formal, official | Oral, exemplary, personally warranted | Emotional involvement and expression | Semiotic | Ecological, ecosystemic |
| Qualified objects | Freely circulating market good or service | Infrastructure, project, technical object, method, plan | Rules and regulations, fundamental rights, welfare policies | Patrimony, locale, heritage | Emotionally invested body or item: the sublime | Sign, media | Pristine wilderness, healthy environment, natural habitats |
| Qualified human beings | Customer, consumer, merchant, seller | Engineer, professional, expert | Equal citizens, solidarity unions | Authority | Creative being | Celebrity | Environmentalist |
| Time formation | Short-term flexibility | Long-term planned future | Perennial | Customary past | Eschatological, revolutionary, visionary moment | Vogue, trend | Future generations |
| Space formation | Globalisation | Cartesian space | Detachment | Local, proximal anchoring | Presence | Communication network | Planet ecosystem |

It is worth mentioning that actors can rely on different conventions at the same time and some objects can be categorised under different orders of worth. An environmental education programme or a waste management project implemented by the developer, for instance, could be qualified objects for both the civic and the green order of worth for there are social and environmental gains, respectively. Table 4.1 summarises the ideas and justifications behind these orders of worth.

The interactions of these worlds could create situations of conflict or collaboration (Boltanski & Thévenot, 2006) and, hence, the importance of common shared values. According to CT, coordinating rational actors through a set of shared values could be more effective than incentives (Favereau, 2008). However, with respect to wind energy, the possible lack of shared values could be an obstacle to social acceptability. Industry and community could perceive wind energy from the perspective of different orders of worth.

By using CT, this research investigates which conventions developers use and if they are aligned with or opposed to the community's justification of the wind farm. As noted before, because conventions also contain a symbolic element, this research intends to complement the analysis under the CT framework with the evaluation of the symbolic category as defined by Devine-Wright (2005). The focus will rely on the relation of symbolic representations of wind energy with the orders of worth communities and developers use to justify wind farms. Therefore, the relevance of the symbolism behind wind power and its effects on social acceptability are analysed.

## 4.2 Methods

To understand perceptions and symbolic aspects, a qualitative method of analysis was used. To grasp the community's perception of the wind farm, one focus group was organised. Additionally, three interviews with industry representatives were conducted.

### *4.2.1 Focus group*

Focus groups "access uncodified knowledge" (Barbour, 2008, p. 12). Therefore, they are the best suited option for this research given that they access "the experiential knowledge, opinions and world-view of the participants, in a context of synergic interaction" (Johnson, 1996, p. 517). In the particular case of the marginalised community studied (Praia do Xavier), the method used was also an opportunity to share their views. It gave insight to collective and shared common values (Babbie, 1989).

The focus group included 19 participants (10 men and nine women, almost 30% of the community). Participants were selected according to convenience sample, meaning they were

chosen by chance instead of using a randomisation process. Due to the size of the community – 20 families and 66 people in total (Mendes et al., 2016) – all dwellers above 18 years old were invited to participate in the focus group, which had a duration of 50 minutes. Professor and researcher of the *Universidade Federal do Ceará* (UFC), Adryane Gorayeb, helped with the scheduling of the meeting and in inviting the participants due to her established relationship with the community from previous research. She was crucially important for the research as she assisted the initial contact with Praia do Xavier's inhabitants and community leaders. Adryane Gorayeb is a Masters and PhD supervisor from UFC in Brazil. In addition, they already have training in ethical research procedures through UFC given they perform research at a PhD level in several communities in the Brazilian Northeast region.

Two weeks before the focus group was held, a meeting was scheduled with the community. Upon arrival in the community, Adryane Gorayeb made the introduction to the community leaders and to some of the dwellers – who were reminded about the focus group schedule. Community leaders also helped to remind participants of the activity.

The aim was to attain a qualitative sample "to reflect diversity within the group" (Barbour, 2008, p. 59). However, participants had something in common guaranteeing that they would feel comfortable to express their opinions and not feel embarrassed or intimidated. In other words, they had mixed attitudes, but homogeneous backgrounds (Morgan & Scannell, 1998).

The selection of participants was in conformance of the methodology approved by Lincoln Human Ethics Committee (see Appendix G). There was no financial compensation to the participants as it had never been done in Praia do Xavier and it could have created conflict within the community, between those who participated in the focus group and those who did not. Instead, food and beverages were provided for all participants after the focus group was finished.

The focus group started with a brief background introduction to the background and scope of the research. Due to some illiterate participants, the Research Information Sheet (see Appendix C) and the Consent Form (see Appendix E) were read to the participants in order to avoid making the ones who could not read uncomfortable. Additionally, their consent to both participate and be taped was recorded. The focus group only had one moderator responsible with two specific roles as stated by SazmandAsfaranjan, Shirzad, Baradari, Salimi, and Salehi (2013). The first role was to oversee the session itself, asking questions, recording the entire focus group and making sure it was progressing without problems; and second to observe the participants and take notes if needed.

The focus group was divided in two stages. First, the following questions were asked:

- What do you think of the wind farm? Do you like it or not? How has it affected your lives?
- What is your relationship with the company?
- Do you associate the wind farm with something specific?
- How has it affected the community?
- Do you accept the wind farm more now? What has changed between then and now?

After that, the participants were divided into four groups: white, green, yellow and pink. Due to their homogeneous perceptions, the participants were randomly assigned to each group. Each group was given one large cardboard paper and a selection of colouring pens, and the participants were asked to complete the following exercise: to draw or to try to express somehow what the wind farm represented to them. After 20 minutes all groups had a drawing that symbolised what wind energy represented to them.

Figure 4.1. Focus group on 15.02.2018 (Photo Credit: Wallason Farias de Souza).

This research applies Convention Theory to understand public discourses and collective representations of wind energy. However, had the focus group revealed divergent opinions and

perceptions, one-on-one interviews would have been performed to supplement the data gathered. One dweller who did not participate in the focus group and whose opinion is commonly known as diverging from those of the rest of the community was invited to an interview. However, this potential participant did not accept the request. Participants of the focus group mentioned that this dweller would sometimes say that the wind farm would bring tourists. Even though this potentially divergent perspective was not included in the research, it will not compromise the results as her perception was regarded by the rest of the community as an exception in Praia do Xavier, thus not affecting the level or content of interactions related to the wind farm.

### *4.2.2 Interviews*

In addition to identifying the community's perspective, this research also compared it with industry representatives' views. For that purpose, interviews with developers were held to understand within which order of worth wind energy is justified. One representative from the company that manages the wind farm at Praia do Xavier was interviewed. Two other industry representatives have also participated in the study. The involvement of participants from other companies provided a sample from the industry's perspective. All interviews were conducted in Brazil: two in São Paulo and one in Rio de Janeiro; two in person and one by phone.

The selection of participants followed the methodology approval followed by the Lincoln Human Ethics Committee. A total of six potential participants was approached. The goal of this research was to work with at least three participants. This number was deemed appropriate because the industry's perspective would likely be shared amongst different companies. In addition, difficulties in arranging interviews with the private sector and the time constraints to perform the research in Brazil meant that three participants would be a more feasible goal. These representatives were first approached by telephone. In all cases email correspondence was used to send all the necessary documents related to the research. The Research Information Sheet (see Appendix B) as well as a documentation certifying my enrolment at Lincoln University (see Appendix F) were sent. Of the six industry representatives, four replied. The ones who did not reply were contacted on the phone once again, but the same procedure from before was to be followed. From the four potential participants who replied, three were available to schedule a meeting during the period for undertaking the research in Brazil.

From the three representatives approached, one recommended an alternate – who was responsible for the company's public relations – to participate in the interview. In this case the participant was reassured that all information provided would remain confidential and that he or she

would have the option to review their answers and amend or exclude any statement. The same option was available for the other participants as well.

After the recruitment of the participants, the interviews were scheduled in their workplace. In one case, however, the interview had to be completed on the phone due to the participant's busy schedule. In this case, the interview had a longer duration as the answers had to be written down. Additionally, the consent form (Appendix D) was sent via email as well as the transcription of the answers for revision.

The participants were asked the following questions:

- What is the company's perception regarding wind energy projects? What does it symbolise?
- Have you been in the field? If so, have you noticed something that caught your attention? Maybe something regarding the community's behaviour?
- Were there any other impacts?
- How did the community perceive the wind farm?
- Has the company implemented mitigation measures?
- Any other relevant point?

All participants have reviewed their answers and none have amended or excluded any of their transcribed statements.

## 4.3 Data analysis

Before analysing the data, the information had to be translated from Portuguese to English. Data analysis included these translated transcripts and the use of the software MAXQDA to code the data. A deductive analysis was chosen, which means a theory was tested in a specific context (Elo & Kyngäs, 2008). In this case, Convention Theory was applied as an analytical framework to the contested location of a windfarm.

### *4.3.1 Data Coding with Convention Theory*

Four groups of codes – and additional sub-codes – were created to support the analysis of the information gathered (see Table 4.2).

Table 4.2 Codes I.

| Codes | Sub-codes |
|---|---|
| Orders of Worth | Civic<br>Domestic<br>Green<br>Industrial<br>Inspired<br>Market<br>Renown |

The coding followed the rationale explained in section 4.1 and some quotes might be coded in more than one order of worth.

### *4.3.2 Public Perceptions*

A second set of analytical themes was chosen based on the Devine-Wright (2005) summary of factors that influence public perceptions of wind farms. This additional analysis aims at understanding how the factors enumerated by Devine-Wright (2005) apply in the context of Xavier. The purpose is to understand the perceptions of wind farms within a framework providing different perspectives and explanations. Unlike the CT framework, which focuses on different types of justifications and their correlation to conventions, this analysis targets the perceptions of wind farms per se. The objective is to compare these findings with those of the literature.

The following codes were created:

Table 4.3. Codes II

| Codes |
|---|
| Physical |
| Contextual |
| Political & Institutional |
| Local |
| Personal |
| Symbolic |

The physical code concerns the aesthetics and acoustics of the wind turbines. Claims of visual impact, for instance, would be coded in this category. The contextual code refers to the siting of the wind farm and the surrounding landscape. Observations regarding the proximity of the wind farm to the community or the impacts on the landscape would be in this category. Political and Institutional involves energy policies and institutions. For example, analysing wind energy through

the lenses of favourable government policies. The local code concerns the degree of involvement of the community and the benefits that can be reaped. Statements about the lack of community involvement as well as local benefits from the wind farm would be included here. The personal code relates to previous personal experiences, so it would contain quotes about individual experiences (Devine-Wright, 2005). Finally, regarding the symbolic code, in the interviews, a specific question was asked, while in the focus group it was illustrated by the drawings made by the participants.

### *4.3.3 Additional Codes*

Additional codes were created to accommodate aspects that did not fit either one of the frameworks (see Table 4.4).

Table 4.4. Codes III.

| Codes |
|---|
| Positive Impacts |
| Negative Impacts |
| Mitigation Measures |
| Pragmatism |

Positive and negative impacts concerned concrete and objectives effects brought about by the wind farm. For instance, noise would be considered a negative impact, while improvement on tourism due to the wind farm would be a positive effect. However, general statements will not be considered. If a participant states that the wind farm brought negative or positive impacts, but fails to explain how, it will not be counted as an impact. Mitigation regards measures implemented by developers to alleviate possible negative impacts and to improve the quality of life in the community. If the wind farm has damaged the local ecosystem, the implementation of reforestation programmes would be a mitigation policy.

Finally, pragmatism was used to code statements that regarded the wind farm objectively as a project. Technical aspects, for instance, would fall into this code. If a participant were to mention the importance of wind energy to the national electricity grid, it would be coded as pragmatism.

## 4.4 Chapter summary

This chapter explained the methodological approach of the research, providing insight to Convention Theory and to the methods used to collect and analyse the data. One focus group was conducted in Praia do Xavier, while three industry representatives were interviewed. CT's orders of worth, the Devine-Wright (2005) categories for social perceptions of wind farms and additional codes were used as a guide to code the data. This would help understand how social acceptability

can be achieved. The following chapter will show the results and frame them into CT to answer the research questions.

# Chapter 5

# Results I

This results chapter considers the data gathered during the focus group in the community being studied and the three interviews with wind energy's industry representatives. The reported results will address the research questions: determining the relevance of CT and symbolic representations to the social acceptability of wind farms and unveiling if developers and community have different representations of wind power that could be related to how both groups understand and justify wind energy. Comprising four sections, this chapter starts with a broad overview of the coding results, followed by a thorough analysis of the data within a Convention Theory framework and the discussion of the specific results of this analysis.

## 5.1 Overview

In reporting the coding results, both codes and sub-codes will be referred to as 'codes'. They totalled 11 items, but only four were present in all four documents, that is the three interviews and the focus group: environmental, civic and market justifications as well as positive impacts. Together with negative impacts, these five codes represented almost 82% of all coded segments (see Table 5.1). When comparing the two sets of data – the industry interviews and the focus group – the following results were obtained: regarding the impacts, industry representatives focus on the positive effects, while the community emphasise the negative ones (see Table 5.2). Each group also uses different orders of worth to justify wind energy: developers rely on the order of market worth, and the community of Praia do Xavier focus on the order of green worth.

Table 5.1. Summary of Coded Segments.

| Codes | Codified segments | Number of documents coded |
|---|---|---|
| Market | 26 | 4 |
| Positive impacts | 24 | 4 |
| Environmental | 22 | 4 |
| Negative impacts | 21 | 3 |
| Civic | 19 | 4 |
| Mitigation | 7 | 3 |
| Industry representation | 5 | 3 |
| Xavier representation | 4 | 1 |

| | | |
|---|---|---|
| Domestic | 3 | 2 |
| Renown | 3 | 1 |
| Inspired | 3 | 1 |
| Industrial | 2 | 1 |

Table 5.2. Interviews x Focus Group.

| | Interviews | Focus Group |
|---|---|---|
| Codes | Codified segments | Codified segments |
| Environmental | 4 | 18 |
| Civic | 7 | 12 |
| Market | 21 | 5 |
| Domestic | 1 | 2 |
| Renown | 3 | 0 |
| Inspired | 3 | 0 |
| Industrial | 2 | 0 |
| Positive impacts | 14 | 10 |
| Negative impacts | 6 | 15 |
| Mitigation | 2 | 5 |

When analysing the transcript for each of the data sets, it is not surprising that there were more similarities amongst the interviews than with the focus group. However, when considering only the correspondence between the existence or absence of codes, interview number 2 uses the same codes as the focus group (see Table 5.3), demonstrating some distance from the other two interviews. This similarity with the focus group can be explained by the presence of the domestic justification, as well as the absence of the renown and inspired codes, in both the focus group and that interview (see Table 5.3). Meanwhile, interviews 1 and 3 have the least codes in common.

Table 5.3. Comparison of all documents.

| Codes | Interview #1 | | Interview #2 | | Interview #3 | | Focus Group | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Codified segments | % of codified segments | Codified segments | % of codified segments | Codified segments | % of codified segments | Codified segments | % of codified segments | Total segments | Total % |
| Environmental | 1 | 5 | 1 | 5 | 2 | 9 | 18 | 82 | 30 | 100 |
| Civic | 1 | 5 | 2 | 11 | 4 | 21 | 12 | 63 | 19 | 100 |
| Market | 6 | 23 | 6 | 23 | 9 | 35 | 5 | 19 | 26 | 100 |
| Domestic | 0 | 0 | 1 | 33 | 0 | 0 | 2 | 7 | 3 | 100 |
| Renown | 3 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 100 |
| Inspired | 3 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 100 |
| Industrial | 0 | 0 | 0 | 0 | 2 | 100 | 0 | 0 | 2 | 100 |
| Positive impacts | 4 | 17 | 6 | 25 | 4 | 17 | 10 | 42 | 24 | 100 |
| Negative impacts | 2 | 10 | 4 | 19 | 0 | 0 | 15 | 71 | 21 | 100 |
| Mitigation | 1 | 14 | 1 | 14 | 0 | 0 | 5 | 71 | 7 | 100 |

When considering the distance according to the code frequency, the results produce a different pattern (see Table 5.4). In this case, results mean the squared Euclidian distance: the sum of the squared deviations; and "0" means there is no distance. Interviews 2 and 3 are less distant from each other due to their more balanced distribution of the codes. Interview 2's distance from the focus group is also smaller when compared to the other interviews due to the absence of the renown, inspired and industrial codes (see Table 5.3).

Table 5.4. Distance Matrix (Code Frequency)

| Document | Interview #1 | Interview #2 | Interview #3 | Focus Group |
|---|---|---|---|---|
| Interview #1 | 0 | 14.41 | 22.71 | 43.85 |
| Interview #2 | 14.41 | 0 | 9.89 | 24.39 |
| Interview #3 | 22.71 | 9.89 | 0 | 44.75 |
| Focus Group | 43.85 | 24.39 | 44.75 | 0 |

## 5.2 Convention Theory Results

The use of CT as a framework of analysis provided insight into the justifications used by the participants. All quotes included in this analysis were translated from Portuguese. The original Portuguese transcriptions of each quote is available in Appendix A.

### *5.2.1 Market*

Amongst the industry representatives, it is possible to see the consistent use of the market justification. This is a similar emphasis on the positive impacts; and over 50% of these beneficial effects are related to market justifications (see Table 5.5). Each interviewee provided examples of positive market effects. While Interview 3 – that with the company that currently manages the wind farm in Xavier –focused on economic benefits realised by individuals, the other two addressed societal gains.

> *One milk producer said he increased investments in his production after the legacy left by the wind farm and the financial resources provided. He went back to school also. In another example, the person bought a motorcycle, another one renewed his house, built a bathroom and so forth.* (Interviewee 3)

> *There are more local benefits, both in the deployment and in the operation phase. This means it generates business, attracts investors and so forth. And there are also economic*

*benefits in the construction stage. When you need labour, you employ locally, so that raises income.* (Interviewee 1)

*There are benefits to the local economy: increase on income, for example. New businesses appear, you got more competitiveness, improvement on commerce. People start spending more because they are earning more.* (Interviewee 2)

Table 5.5. Intersection of Codes in Interviews.

| Intersection | Frequency | % of Positive Impacts |
|---|---|---|
| Market & positive impacts | 8 | 57.1 |
| Civic & positive impacts | 1 | 7.1 |
| Environmental & positive impacts | 1 | 7.1 |

There were, however, mentions of economic impacts with possible negative implications:

*There were some impacts. Regarding the local economy, if you have to feed 500 workers, of course that's going to attract food businesses to town, but which food business to choose to feed the workers? The one from Mr. X or the one from Mr. Y? Maybe you will choose the first one, but the second guy has the most power in the community, so he's going to tell everybody your project is not good for the community, and people believe him, of course.* (Interviewee 2)

*New businesses come, right? But all kinds of businesses come. So, there's suddenly an offer for all kinds of services. Because workers from other regions also come, so you create an increase in demand for other services, including prostitution. That leads to a larger number of brothels, followed by an increase of sexually transmitted diseases.* (Interviewee 2)

Interviewee 2 was also the only one to provide a negative economic impact: "real estate speculation" [especulação imobiliária]. Even though the focus group did not refer to it, this is also a concern regarding Xavier (Gorayeb et al., 2018).

### *5.2.2 Civic*

The order of civic worth was the second most common both in the focus group and in the interviews. Two interviews and the focus group highlighted the issue of the access. Nevertheless, both interviews shed a light on its negative implications, while the focus group underlined its positive effects:

*There were small negative impacts. The issue of infrastructure: the streets were small to carry the blades, so alternative routes had to be designed, often road construction. That usually annoyed the population, the noise, the road works. Infrastructure was definitely an issue* (Interviewee 1)

*Access to the community got better: better roads, better infrastructure. But there were impacts too, cumulative. The need for better and larger roads to transport the blades required bigger trucks. That led to larger amounts of dust in the air, leading to health impacts: respiratory issues within the community increased. Then what is the solution? To pour water on the road to compact the land, but then it is a region that suffers with water scarcity and you are wasting water on the road. So, that leads to other problems too.* (Interviewee 2)

*Here it improved a bit. Because we used to walk up the ramp. They gave us access to walk. Because we were already old, it was costly. Today there's a schedule [to come and go], they leave us there. So, it improved, right? A little. Before it was a great difficulty for us […] we have the road access, it's better for the education of the kids, for the health. Because before, for [medical] appointments we needed to go to Amarelas, pass through the dunes. And today no, thank God it's better.* (Focus Group Participant 1)

*Positive was only the access that is free for people to walk. Only that. Because the day we ask someone to go to the company […] or someone gets sick, alright.* (Focus Group Participant 3)

### *5.2.3 Domestic*

The domestic justification was only apparent three times: twice in the focus group and once in the interviews. Even though it is not present as often as the aforementioned justifications, it sheds a light on the social relations that are sometimes difficult to analyse. One interviewee highlighted the relevance of power dynamics within the community:

*So, this is one thing that is very important and people usually forget: we have to consider the power dynamics of the community. Especially in small villages. It depends a lot on the speech and how you say things. […] If the company gets the most outspoken, confident person to be on their team, [the company] got half the community on their side.* (Interviewee 2)

Whereas the interviewee emphasised the social relations within the community, in the focus group, a couple of participants underlined the relations between Xavier and neighbouring communities. This could indicate divergent thinking amongst the neighbouring communities:

*They [the wind farm] dig a lot and bury the river. The river is dry. So, they said they were doing a meeting here to talk about it there […] who lives here, every meeting we say the same […], but other communities (such as) Tapuiu, Nova Rio, Araras, Barroquinha, nobody does anything.* (Focus Group Participant 7)

*The other communities couldn't use the access, only Xavier. It was hard, it was too much conflict. The people from other communities threatened us because if they couldn't enter in Xavier there would be conflict. And you know what it takes to start a conflict, right? So that was in a hearing […] two people came from Amarelas, they were supposed to come from all communities, but they did not come.* (Focus Group Participant 3)

### *5.2.4 Environmental*

The environmental justification was the most frequently used in the focus group, however it only received a few mentions in the interviews. One interview participant mentioned the environment to state that wind energy is a "clean energy" [energia limpa] and "sustainable" [sustentabilidade] which translates to positive environmental effects, but did not associate with any concrete positive impact. Another interview participant used the green argument to boost the inspired justification:

*Most importantly you have the ecological aspect as well. That's how we perceive it [wind energy] […] it is a clean energy and that has a positive impact on people's lives.* (Interviewee 3)

*Working with sustainability, people feel prouder, I saw a lot of it.* (Interviewee 1)

The other one only mentioned the environment when talking about a mitigation measure implemented by the company that brought benefits to the community:

*The company performed mitigation measures, such as an environmental education program. It was a very cool program.* (Interviewee 2)

While the interviews did not feature the environment as their main argument, the focus group emphasised the wind farm's negative impacts on the local environment (see Table 5.6). Most of the environmental concerns regarded the lagoon, which was mentioned 20 times during the focus group. When comparing to other local environmental characteristics, the river was referred to 11 times and the dunes, five times. The dunes characterise the local environment and the landscape.

Table 5.6. Intersection of Codes in Focus Group.

| Intersection | Frequency |
|---|---|
| Environmental & negative impacts | 13 |
| Civic & positive impacts | 8 |

These environmental concerns were linked, however, to the community's wellbeing, which sheds a light on the possibility that the primary concern was the community instead of the environment. For instance, the company had plans to implement a recycling project in the community, but it did not happen:

> *In the meeting [they said] they wanted to make a project with rubbish here, right? […] recycling, yes. And it is very good because we do not have where to put the trash, right?* (Focus Group Participant 7)

Other participants place emphasis on changes to their fishing routine changes after the lagoon was destroyed by the wind farm developers:

> *The lagoon was destroyed. […] That was where we took our livelihoods from, we got the fish from there, now that is over* (Focus Group Participant 2).

> *The lagoon is dry. This lagoon [had] a thousand square meters. It's dry the lagoon [now]. So, fishing in the sea.* (Focus Group Participant 3)

Additionally, when asked to draw what wind energy represented, all four groups drew or mentioned the dry lagoon. This can be explained by their livelihoods, which relied on fishing in the lagoon. Some of the participants stated:

> *The river there [you can] pass from side to side on foot, it is so shallow you can do it. And it was not like that before, it was deep. I'm sure if there had been a study on the land for sure it would say that the wind farm impacted the river a lot.* (Focus Group Participant 7)

On a few occasions, however, participants expressed their concerns with the environment per se. One addressed the loss of biodiversity of the region:

> *[Where there is] the first turbine here, turtles used to put their eggs, and the birds, right? Many birds used to come, and now it's over. They messed with the environment a lot. The foundations [of the wind turbine] […] are 20 meters deep, you understand? They stirred a lot with the land and, like he said, there is no more fish to eat.* (Focus Group Participant 8)

Another participant also claimed that other species have been threatened by the wind farm:

> *One girl came to my father's house to ask about the environment. They were just hired to research the bats that die because of the turbines. I asked if she had already found any dead. She said yes. Bats, vultures and other birds that come from the sea, fly towards the wind farm and die.* (Focus Group Participant 7)

One participant showed concern about chemical leeching from the construction of the wind farm:

> *About the environment, when the tide is high, around that turbine there, the yellow thing is there, that is acid. It is yellow at the turbine, at the base. They have a lot of chemical […] every let's say 50 cubic meters of concrete, they would put 30, 50 tons of ice, besides all the chemicals. There was a lot of it, a lot.* (Focus Group Participant 10)

Environmental concerns corresponded for a large portion of the community's representation of the wind farm. The drawings made by the participants (see Figures 5.2 to 5.5) also support this statement. By analysing the drawings following the examination of the data within the CT framework, it will be possible to address one of the questions proposed by this research.

## 5.3 Symbolic Representations

Are the community's and developers' justifications for wind farms associated with their symbolic representations of wind power? The community's representation is largely related to the degradation of the environment and somewhat related to the collective welfare gains. The community also used the order of green worth (18 coded segments) to challenge the conventions under which the wind farm was built. The order of civic worth came in second with 12 coded segments; however it supported conventions that emerged after legal action was taken, such as housing and road access. Although in smaller scale, the market and the domestic orders of worth were also used (see Table 5.2).

After analysing the group drawings, both the pink and the white groups said that the wind farm represented the "destruction of the environment" [destruição do meio ambiente], illustrating – together with the yellow group – the "dry lagoon" [lagoa seca] (see Figures 5.1-5.3). However, three groups – the green, the white and the pink – also represented it in terms of positive civic impacts, mentioning the "improved access" [o acesso melhorou] (White Group) and "the houses we got" [as casas para nós] (Green Group) (see Figure 5.4). This representation – focusing on environmental losses and civic gains – is supported by the frequency of the segments with these codes (see Table 5.2).

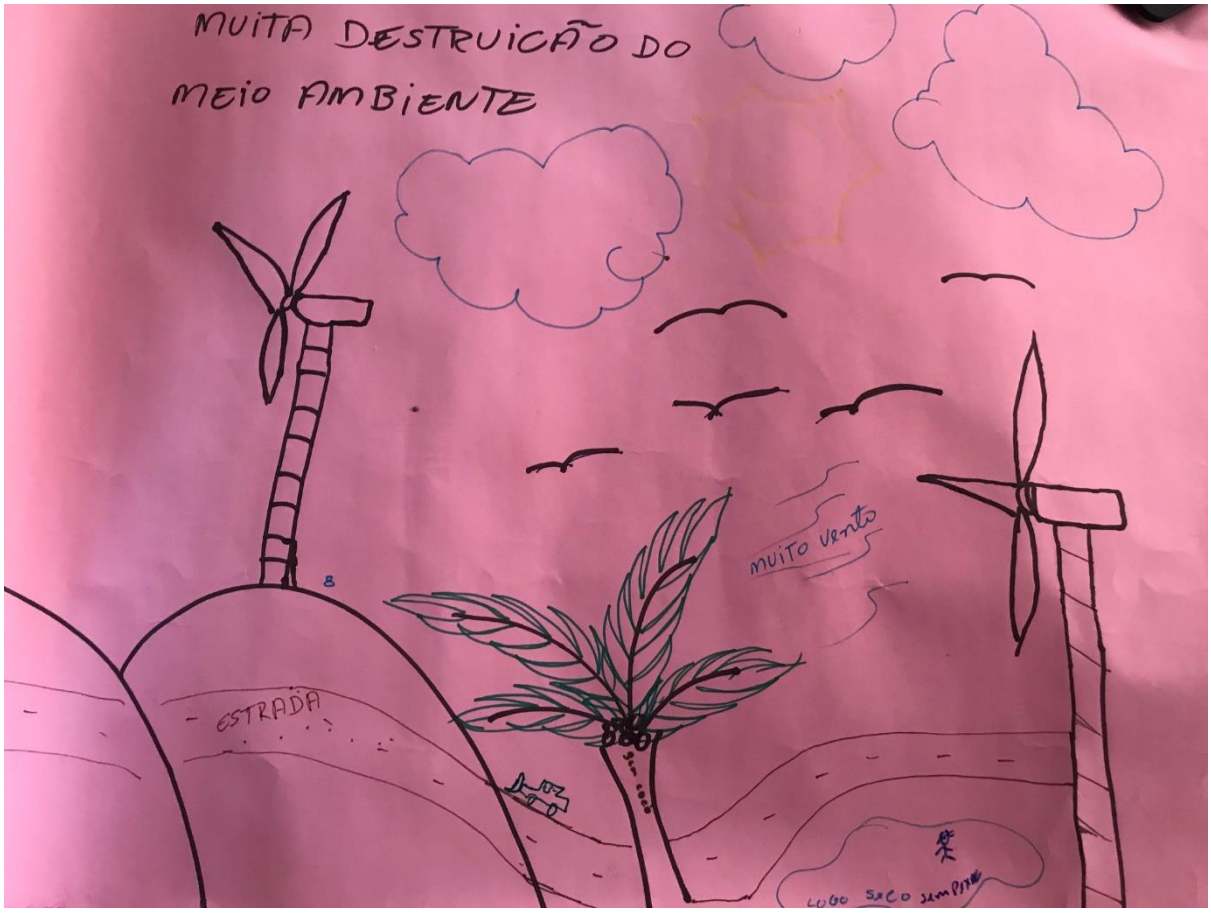


Figure 5.1. Pink group representation.

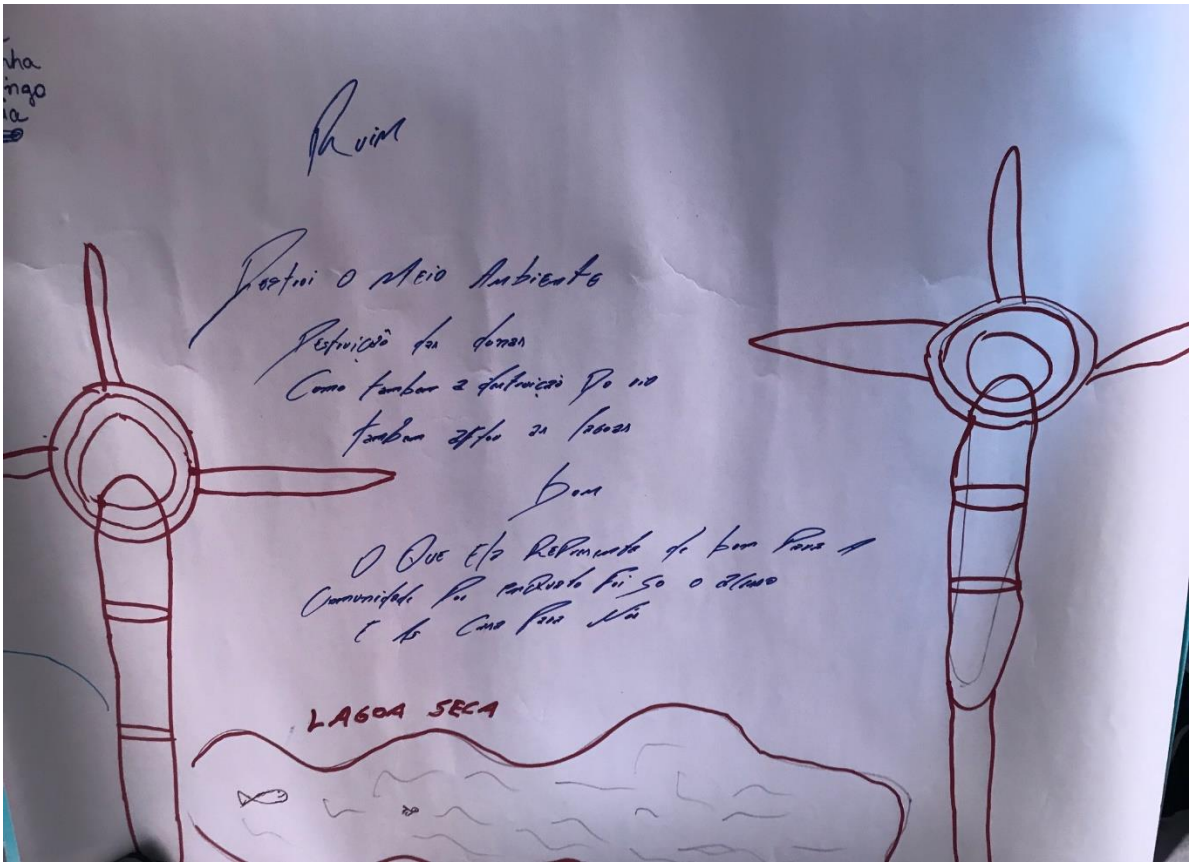


Figure 5.2. White group representation.

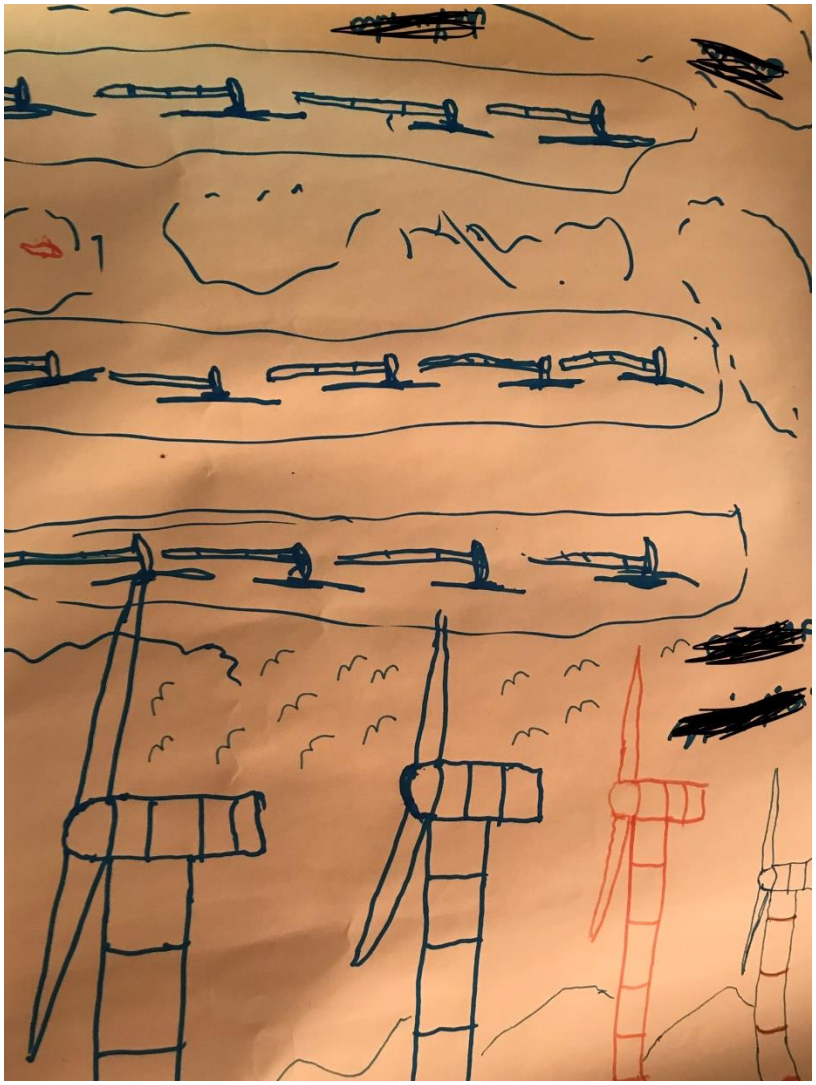

Figure 5.3. Yellow group representation.

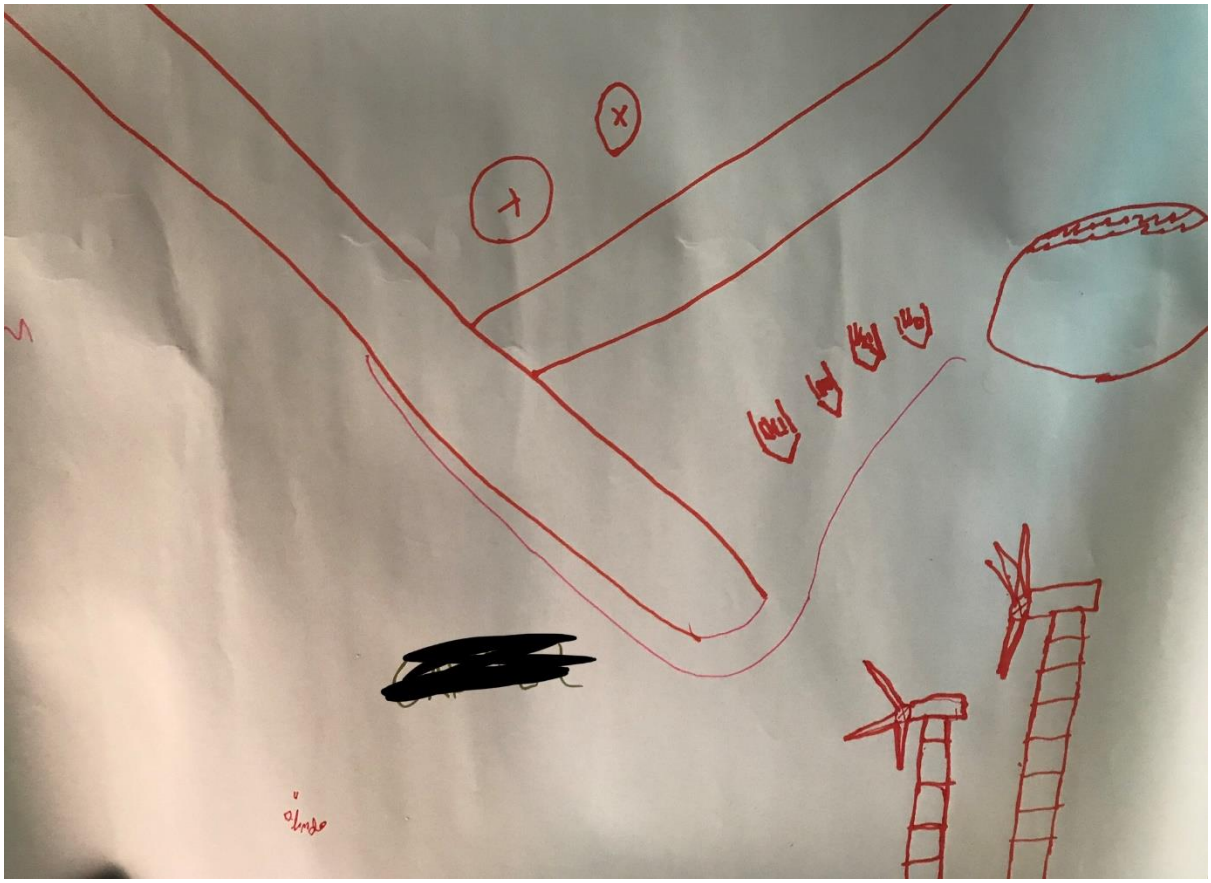

Figure 5.4. Green group representation.

The groups' representations show the relevancy of the environment and highlighted the wind farm's negative impacts. Additionally, Table 5.7 shows the frequency of coded segments that presented intersections between the environmental justification and negative impacts and between the civic justification and positive impacts. Regarding the latter, while access was mentioned 11 times during the focus group, house was mentioned 10 times. Both words are connected to the mitigation code. Notwithstanding, in 80% of the mitigation coded segments, the participants qualified their statements by saying that the only reason such alleviation measures were implemented was because the community "fought together with the prosecutor" [a gente lutou com o promotor] or because the dwellers "had to fight" [a gente teve que lutar] and "went to court" [entramos na justiça]. These quotes show that the mitigation measures only happened after the community's mobilisation. These measures – which include the improved access to the community and better housing – are the reason why wind power is also represented in a positive way.

The developers' symbolic representation of wind energy had different results. Their response mainly regarded the financial and ecological aspects of wind energy and the positive effects on the company image. To quote each participant:

> *Wind energy is seen as something advantageous. It has a certain highlight. It is very well perceived and evaluated. Image is an important factor too.* (Interviewee 1)

> *Well, wind farms are represented in economic terms, meaning that the economic viability of the project is essential. Of course, there is the environmental argument, but nothing gets done without the economic viability.* (Interviewee 2)

> *Wind energy is our main feature. It is a big part of our group. Renewable energy has a strong importance and this type of energy is facing good and steady growth, but most importantly you have the ecological aspect as well. That's how we perceive it.* (Interviewee 3)

Although different symbolic representations were obtained, their justifications relied heavily on the order of market worth – and in a smaller extent focused on the civic, environmental, renown, domestic and inspired worlds (see Table 5.2). However, when analysing their discourses it is possible to identify some shared concepts of what wind energy represents to them. In all interviews, participants had a more pragmatic view, pointing to the fact that it is a project.

> *For clients too, having a portfolio with a diversity of energy projects is positive for the image.* (Interviewee 1)

> *Nothing gets done without economic viability.* (Interviewee 2)

> *One of the strongest aspects [of wind energy] is that the distributed energy is attached to the consumer points […] it is possible to have a more compatible cost and add strength.* (Interviewee 3)

> *In terms of social impact, we will look at the financial side as well: how much does it [wind energy] impact financially? What is the impact generated? We are trying to quantify this impact. It is important know in order to implant new projects.* (Interviewee 3)

Within the community, by contrast, the wind farm generates more personal and passionate feelings. None of the criticism directed towards the wind farm completely rejected it. Besides, the drawings showed that all groups featured the pre-eminence of the wind farm (see Figures 5.1-5.4), pointing to the fact that it has become a part of their environment.

## 5.4 Results Analysis

In the focus group, most environmental concerns were linked to the community's wellbeing rather than the environment itself. The landscape changes were related to their fish supply. The recycling program could be regarded as a community benefit. The same logic is applied to the concerns about the river being dry:

> *My worry, do you know what it is? There are several communities. We said before that the river is getting dry, [that] the wind farm caused it. How many communities benefit from the river?* (Focus Group Participant 12)

Supporting this finding is the fact that only two environmental concerns did not have clear direct implications for the community's wellbeing. Both the disappearance of the turtles and the killing of birds and bats referred to the local ecosystem; however, they could also be associated with their identity since Xavier is a traditional community (Evangelista et al., 2016).

Another factor that could have influenced results is the fact that Xavier is a politicised community: since the inauguration of the wind farm in 2009, Xavier has been allied with several institutions and organisations – including a religious one – to put forward their objectives:

> *Terramar was there, Ibama was there, and the Human Rights. And the Federal University was also there at the time accompanying us and the 'Pastoral Social´. So [because of] all these leaderships that have been following us, today there is this building here, these houses.* (Focus Group Participant 3)

This shows that Xavier had strategic allies in different fields. Terramar is a non-profit social-environmental organisation, Ibama is the federal government's environmental institute and Pastoral Social is the Catholic Church's charity body in Brazil.

Another recurring issue in the focus group was the lack of engagement with the community when the wind farm was built:

> *The wind farm here, the company had to come and communicate with the community, but they did a bad thing, because when they put on the map with the Federal Government, they said as if the land was a swamp, that nobody lived here. And nobody was employed to work on this wind farm.* (Focus Group Participant 3)

> *But in the beginning, I didn't think it [the wind farm] was good, no. Because they told us to not use [the access]. Go on and leave, we don't want you here. And we had to leave because it was not ours, right?* (Focus Group Participant 1)

## 5.5 Chapter Summary

This chapter presented the results of the research. Despite some divergences, the interviews with industry representatives were more similar to each other than with the focus group. The latter focused on the negative environmental impacts and, at a smaller scale, on the positive civic impacts. By comparison, the interviews mainly highlighted the economic gains, followed by a few civic considerations. Even though there is a compatibility with how the community symbolyses wind energy and the environmental and civic justifications, other justifications were not included in their representation. Regarding the interviews, the results had more divergent representations. Only the market justification was a constant. The following chapter will continue to show the results, but from a different theoretical framework.

# Chapter 6

# Results II

This chapter uses the Devine-Wright (2005) summary of factors used by most of the literature to understand public perceptions of wind farms. The first section comprises an overview of the analysis, while the following five sections focus on each of the categories coded in the participants' discourses. The following section shows results that fit neither the Devine-Wright (2005) categories nor the CT framework. Finally, the challenges and limitations of the research are presented.

## 6.1 Overview

Beyond the scope of Convention Theory framework, a second set of analysis was chosen to provide different perspectives and explanations to the community's perceptions on wind farms. The objective was to identify if there are other explanations that CT cannot assess. Based on the Devine-Wright (2005) categories, six classifications were found in the community's discourse: physical, contextual, political & institutional, local, personal and symbolic. Applying the same categories to the interviews, both groups seem to have similar perceptions (see Table 6.1). Because symbolism has already been examined in the previous chapter, it will not be discussed in this chapter.

Table 6.1. Frequency of Codes.

| Codes | Frequency | |
|---|---|---|
| | Focus Group | Interviews |
| Physical | 2 | 2 |
| Contextual | 2 | 1 |
| Local | 10 | 10 |
| Political & Institutional | 0 | 0 |
| Personal | 3 | 3 |
| Symbolic | 4 | 3 |

## 6.2 Physical

Regarding the physical category, when asked to draw what the wind farm represented to them, all four groups drew the wind turbines as something defining the landscape. The

disproportionate size of the turbines is a common characteristic (see Figures 5.1- 5.4). Additionally, one participant drew attention to one physical particularity of the wind turbine:

> *The foundation like it is there now, the foundations are 20 meters deep, you understand?* (Focus Group Participant 8)

Two interviews had mentions to the physical factor. Besides the aesthetics, it mostly concerned the acoustics:

> *About the visual impact, it depends on the person perceiving as positive or negative. But it's interesting that people often did not like it when the blade was not spinning […] There is noise too, which I do not know if it bothers that much.* (Interviewee 1)

> *There was no visual impact. The wind turbines were perceived as nice, cute, cool. And no noise. No complaints regarding noise or aesthetics.* (Interviewee 2)

## 6.3 Political & Institutional

The political & institutional category was not used, which means the perception of Xavier's wind farm does not include the analysis of energy policies or of local and national institutions. One could argue that the legal action taken with the prosecutor could be classified as a political activity; however, the reduced emphasis on this category could be explained by the resolution of political issues.

## 6.4 Personal

Past experiences are encompassed by the personal classification. The third interview was the source for all three codings (see section 5.2.1). In the focus group, both participants 8 and 10 share a personal experience of when they worked in the wind farm: "I worked in 2009" [eu trabalhei em 2009] and "I worked 10 months there" [eu trabalhei 10 meses lá], respectively.

## 6.5 Contextual

The contextual category was present twice in the focus group as it correlates with the negative impacts on the landscape, in other words, on the dunes:

> *The dunes, the hill they move them from one side to the other. So the hill there, they are changing for the road, they are moving to the other side, and there will be no more hill. In 50 years there will be no more Barroquinha, no.* (Focus Group Participant 8)

*They put a road in the middle of the dunes, so destroyed the dunes, knocked down trees, dried the lagoon.* (Pink Group)

However, the proximity of the wind farm to the community was not an issue in the focus group. Regarding the interviews, there is only one participant who alludes to this category:

*[A wind farm] disrupts the view, interrupts the passage of the population.* (Interviewee 1)

## 6.6 Local

The local category can be understood as sociocultural and place identification as well as the degree of local wellbeing (Devine-Wright, 2005). There is a correlation between this factor and the positive economic and civic impacts enumerated by the participants:

*We have actually a satellite planning related to the implanted processes, where we had contact with a few people and how they were affected […] [it] has a positive impact on people's lives. We want to show the change in this micro-cosmos.* (Interviewee 3)

*There was little engagement with the community before. Today, not only spending with the community has increased, but also their participation.* (Interviewee 1)

*There are qualities. They brought homes, right? [They] brought access to Camocim […] which is better, and the road.* (Focus Group Participant 10)

The exception would be the second interviewee who also mentioned the "cultural impacts" [impactos culturais]. In the focus group, while one participant pointed out the demise of their "livelihoods [where] we got the fish" [sustento pra tirar o peixinho], it was mentioned by another that the community is not benefiting like it should:

*There is the company report going to the whole world saying that they benefit poor communities, and none of that has been going on here. So […] other people [from the company] who come here, saying this would happen and so far, nothing.* (Focus Group Participant 3)

## 6.7 Additional Results

Some of the data collected could not be classified under the CT framework or the Devine-Wright (2005) categories. The comparison of the two sets of data offered an interesting insight on the participant's discourse. In the focus group, the most repeated word was 'they' – almost always referring to the company that constructed the wind farm -, whereas in the interviews 'we' was the

third most repeated word. The use of the words “us”, “we” and “they” could be an unconscious form of maintaining the bias between both groups (Perdue, Dovidio, Gurtman, & Tyler, 1990). In other words, it would be a way of perpetuating the dispute between community and developers.

*They gave us access to walk.* (Focus Group Participant 1)

*They did a bad thing, because when they put on the map with the Federal Government, they said […] nobody lived here.* (Focus Group Participant 3)

*The lagoon that they destroyed.* (Focus Group Participant 13)

*They dig a lot and bury the river*. (Focus Group Participant 7)

*They messed a lot with the environment.* (Focus Group Participant 8)

*We have solar energy as well, big scale.* (Interviewee 3)

*The Raízes project explains a lot about the actions we do in the communities.* (Interviewee 3)

*The results are promising. We have actually a satellite planning related to the implanted processes.* (Interviewee 3)

*Not only did we bring financial resources, but also education, knowledge. (Interviewee 3)*

*We have to consider the power dynamics of the community.* (Interviewee 2)

In the case of the community, this finding emphasises the fact that the company is held accountable for the impacts of the wind farm. Besides, it points to the notion that they were spectators to the company’s action and were not engaged in the process. On the other hand, industry representatives only link themselves to positive impacts associated with the wind farms.

Another peculiar data regarded the fact that one community (not Xavier) disliked when the blades were not spinning, not only referencing to the physical factor of wind farms, but also to their perception:

*Sometimes the blades were driven to spin outside the windy hours because the population wanted to see the blades spin. Therefore, wasting energy.* (Interviewee 1)

The community’s perception of the success of the project was directly connected to the wind farm’s operation. This is interesting as it contradicts some of the literature that states that communities would prefer immovable blades for it would eliminate the noise (Saidur et al., 2011).

## 6.8 Chapter Summary

This results chapter aimed to use the summary of factors for comprehending public perceptions of wind farms enumerated by Devine-Wright (2005). According to such criterium of analysis, both the interviews and the focus group perceived wind farms almost under the same spectrum. With the exception of the contextual and political & institutional categories, all others – physical, local and personal – were coded the same amount both in the focus group and interviews. The local category was mainly associated with positive impacts, while the contextual to negative effects. On the light of the findings of the previous two chapters, the next one will examine possible implications of the study.

# Chapter 7

# Discussion and Conclusions

This chapter aims to discuss the implications of the results found and to compare them with those of the literature. First, Xavier's changing discourses will be analysed. The second section will situate the discussion within CT and what relevant findings this approach could offer to the conflict in Xavier: including a more detailed discussion of the orders of green and civic worth. The next section will focus on the symbolic factor and its relevance to the study of social acceptability of wind energy. Finally, the relevance of community engagement will be discussed. Additionally, future research will be recommended to help clarify some of the issues encountered.

## 7.1 Changing Discourses

After analysing the results from the focus group and comparing these with the findings from previous research, it is possible to conclude that discourses have changed – and perhaps are in constant change. Some of these changes are due to some resolution of conflict. Criticism regarding the wind farm's full supply to the national electricity grid (Gorayeb, Mendes, et al., 2016) ceased after electricity was supplied to the community. The problem concerning the road blockage (Mendes et al., 2016) was also solved. In both cases, the community's discourse was reformulated. From negative impacts, these issues became positive outcomes of the wind farm: the supply of electricity and the improved access to the community.

Other issues amongst the most recurring ones found by previous research include complaints about the noise and the risk of accidents (Meireles et al., 2013; Mendes et al., 2016). Regarding the former, it would be included in the physical category according to the Devine-Wright (2005) categories of social perceptions of wind farms. The physical features of wind turbines are often perceived as a relevant factor to the rejection of wind farms (Castro, Renováveis, & Descentralizada, 2007; Hoffman, 2008; Redlinger et al., 2002; Stankovic et al., 2009), however, as seen in the focus group, it was the impacts attached to these characteristics rather than the physical features per se that influenced the perceptions of the community. The mammoth blades were criticised for killing bats and birds. The depth of the wind turbines' foundation was mentioned because chemicals were mixed with the construction materials. The foundations could also reflect the permanency of the turbines. Concerning the noise, however, even though the literature puts it as an argument against wind energy (Devine-Wright, 2005; Meireles et al., 2013; Mendes et al., 2016), there were no complaints concerning this matter in the focus group, which is coherent to the noise levels scale put together by Stankovic et al. (2009) (see Table 2.1). The risk of accidents which was equated to the feeling of constant fear in the community was directly related to the contextual

category as some wind turbines are extremely close to some houses; however, this topic was also not an issue in the focus group. Given the absence of the physical category and of the proximity of the wind farm to the community, it could be deduced that they are no longer relevant to social acceptability.

There are also new elements entering the community's discourse. For the first time the community demanded the delivery of a "basic food basket" [cesta básica] as a mitigation measure. This could point out that a new area of contestation might be emerging. It shows a new form of compensation is still being demanded, focusing on the order of civic worth. Instead of repeating the same reasoning, there is always a new line of logic replacing old argumentations that, perhaps, have not contributed to the community's goals. This change in the community's discourse could have its roots in their comparative analysis with other communities. One participant in the focus group pointed out that one community in the Amazon received monetary compensation after a wind farm was built there. Elsewhere in Brazil, for instance, communities receive this basic food basket and payment for the lease of the land (Tendero, 2013).

These reconstructions of discourse also support the fact that context changes. Thus, the importance of continuing to study the community of Xavier. Each of the previous studies targeted a specific period in time. However, new events and information can alter perceptions and make discourses more fluid.

### *7.1.1 Further Research on Changes in Discourses*

In this case future research might examine if there is any pattern in the changing of discourses and what are its consequences. Therefore, a thorough analysis would have to be performed regarding the community's justifications. Following the analysis of public archives, newspapers and previous literature to determine which have been the arguments used, a mixed methods approach could be used in the research. Concerning the quantitative methods, a Likert-type scale could be used, where participants would be asked to indicate which arguments are relevant to them on a sequence from strongly agree to strongly disagree. Additionally, on another question, participants would be able to answer if arguments considered irrelevant today were relevant on the past. Following this section, the qualitative method of analysis would begin. In the case that any participant responded to the last question affirmatively, they would be asked their reasons, including what influenced them. Perhaps the community slowly shifted their mindsets. Another possibility would be that they were influenced by events in other communities or by people or organisations from outside Praia do Xavier.

## 7.2 The Order of Green Worth

The environmental aspect is the main focus of conflict. Nonetheless, industry and community have different understandings of the environment. When the order of green worth was used in the interviews, it was mainly associated with a more holistic view of benefits to the global environment through the use of wind energy technology. Participants mentioned the "sustainability" [sustentabilidade] of wind energy and the fact that it is a "clean energy" [energia limpa]. Only in one interview, did the participant used the green justification to address a mitigation measure implemented by the company in the form of an "environmental education program" [programa de educação ambiental]. The community, on the other hand, focused on the local environment and on the community, which raises the question as to whether the environment was the primary concern. This also sheds a light on the possibility of a division in the order of green worth between those justifications that are truly focused on the environment and those that have also civic goals.

In Xavier, local environment includes the dunes, the seasonal lagoons and the river – all of which were mentioned in the focus group. However, as pointed out in the activity, other communities nearby do not seem to be as concerned as Xavier about the environmental impacts, which brings about another relevant point to discuss: Xavier's analysis through comparison with other communities in the region. On a few occasions participants of the focus group claimed they were the only ones mobilised to "fight in the court" [brigar na justiça], while other surrounding communities "do nothing" [fazem nada].

> *But the people there [in other communities], do they complain? No. Do [other communities] complain? No. Do [the people] on the island complain? No. Arara complains? No. Only Xavier?* (Focus Group Participant 2)

This statement is coherent with the fact that Xavier's quarrel with the wind farm developers did not reverberate in other localities. In addition, there are no studies that link Xavier's judicial litigation with significant effects to Brazil's environmental policy or to the country's judicial system. Given the community's remote location, their dispute with the developers did not get much exposure outside of Ceará, except for a few media articles that emphasised the proximity of the wind farm to the community and the turbines' prominence on the landscape (Fernandes, 2009; Rebouças, 2009).

It could be argued that the physical factor of the wind farm and its proximity to the community places Xavier as the most direct affected party. However, neither the first nor the second argument was decisive during the focus group. As a traditional community, Xavier's identity is

intrinsically connected to the environmental characteristics listed before (Evangelista et al., 2016; Mendes, 2016). Their complaints regarding the wind farm, therefore, might be more associated with an identity issue than with an environmental issue per se. Hence, it could have contributed to the fact that only Xavier inhabitants have mobilised themselves, or at least they were the only ones who have publicly criticised the wind farm either through the judicial action with the public prosecutor or through the local newspaper.

The community's identity as an issue also evidences the Western bias of CT. The parameters for classifying a justification as green must present an environmental form of evaluation, which is tested using sustainability as a criterion. However, in the context of some indigenous and traditional communities, such as the Maori in New Zealand, there would be no separation between environment, person and identity (Harmsworth & Awatere, 2013; Moeke-Pickering, 1996). Therefore, the order of green worth could be expanded to include also an 'order of identity worth', for instance. This new green convention would include not only environmental aspects, but also identity issues.

## 7.3 The Order of Civic Worth

After examining the results obtained from the analysis of the data under the CT framework, two orders of worth appear more frequently as a basis for response to wind farms. Market justifications were predominant in the interviews, while the environmental ones were dominant in the focus group. Despite being used by both groups, these orders presented an unbalanced proportion (see Table 5.2). Each of these justifications would have their own ethics, valuations and their own ways of achieving coordination. According to Thévenot (2002), when two orders of justifications clash, coordination would be achieved through a new type of evaluation. Therefore, in the absence of contracts to ensure agreements, the order of civic worth appears to be not only the common ground between community and industry representatives, but also a way of reducing conflict and increasing social acceptability. It is used by both groups on a more similar proportion (see Table 5.2). The access was a focal point for the community and developers. Both parties perceived it as a means to improving wellbeing. The community mentioned that the access made children's attendance to school easier. It also facilitated occasional or emergency visits to the hospital. The industry representatives were more pragmatic and emphasised the gains in infrastructure. Nonetheless, the order of civic worth had consistent use in both groups.

The relevance of this order of worth is coherent with Fournis and Fortin (2017) findings that the social side of implementation is as important as technology. Stephenson and Ioannou (2010) argued that the social acceptance of renewable energy in New Zealand must consider the trade-off

between development and the environment. A similar point could be made in Praia do Xavier: the trade-off between civic gains and environmental losses should be considered. When the wind farm started its operations back in 2009 the negative environmental impacts were significant, while the social benefits were null. Therefore, the trade-off was unacceptable. Since then, the community has experienced some civic gains, such as the improved access and the new houses. This trade-off has partially changed the perception of the community. However, the gains in road connectivity cannot replace the loss of the lagoon. Additional civic benefits are not a substitute for the losses in biodiversity, recreational areas and so forth. Nonetheless, the perception of most dwellers in Xavier is that additional civic gains could make this trade-off more accepted, thus improving the wind farm's social acceptability.

Finally, it should be considered that Praia do Xavier's social wellbeing is connected to the environment – similar to other traditional communities in Ceará (Evangelista et al., 2016). Therefore, there is not a clear separation between the orders of green and civic worth. This proves that people can generate shared understandings of social and public goods and use them to justify social coordination as well as challenge unfair coordination structures (Thevenot et al., 2000).

### *7.3.1 Further Research on the Order of Civic Worth*

In order to fully comprehend the degree in which the order of civic worth could be used to reduce conflict, the surrounding communities should also be studied in order to assess what impacts from the wind farm are felt in those locations. Even though Xavier is where people are more directly affected by the impacts, there are no studies analysing how the nearby communities are affected. From Xavier's perspective, the surrounding communities have not been as interested as themselves in demanding mitigation measures. However, there is not sufficient data to support their claim. Therefore, a quantitative method of analysis could be performed with the other communities. A Likert type survey could be used with participants, asking them if each of the impacts felt by Xavier's inhabitants were also true for their community and if they have felt other impacts. That way it would be possible to check if the order of civic worth is also the common denominator between those communities and the developers.

## 7.4 Symbolism

Regarding the focus group results, symbolism was deeply attached to the impacts of the wind farm. The lack of a concrete resolution to the conflict – that has been ongoing for almost 10 years – may have contributed to this intrinsic association of wind energy and the local impacts – positive and negative - caused by the wind farm. This research tried to assess the community's

symbolic representations and how they might affect the justifications used for wind farms, but symbolism did not appear to have such a relevance.

One factor that could explain this result is that the word 'symbolism' had to be replaced by the word 'representation' – as it would be easier for participants to understand the concept. The dwellers, however, are experiencing the impacts themselves, and the conceptualisation of symbolism brought to the community might have been an exceedingly abstract concept. Furthermore, because Xavier has gone to the public prosecutor to legally demand compensation after the wind farm was built, the community made strategic partnerships with several organisations. It is not clear if these partnerships might have influenced their perception and tampered with their symbolic representations of wind energy. Therefore, the association between symbolism and social acceptability does not seem to be relevant in this context.

Regarding the interviews, symbolic representations of wind energy have varied from economic and environmental aspects to the image. These divergent results could be explained by the small number of participants – only three – which prevented the establishment of a possible pattern had more participants been recruited. Additionally, even though all participants worked in the industry, different companies might have had different experiences in the field and dealt with contrasting contexts and with a broad range of public acceptability. In Brazil, there are cases where wind farms have been socially accepted, especially in the south of the country. Literature suggests that different ecosystems and affected groups make the difference: in the south, wind farms are built on land used mainly for grazing (Bier, 2016; Bier & Verdum, 2015; Santos, 2014). Additionally, land tenure is stable, held on a continuous basis without fee of any kind, thus guaranteeing its security (Lyne, 2009; Place, Roth, & Hazell, 1994). Companies with projects in this region have experienced improved levels of acceptability in comparison to the Northeast of the country, for instance. As with the community, the concept of symbolism might not be relevant in this context to assess the industry's perception.

### *7.4.1 Further Research on Symbolism*

In other contexts, further research would be needed to evaluate if the symbolic factor has a concrete influence on the social acceptability of wind farms. It would be recommended a research comparing two or more case studies - preferably with divergent results - where the wind farm has been built by the same company. Focus groups could be held in each community in order to discover what is their symbolic representation of wind energy and how it is related to the wind farm's social acceptability.

A broader range of examples would provide more reliable findings. Besides, studying communities' social acceptability of wind farms built by the same company would provide more conclusive results of how symbolism can vary among the communities – even if assuming the actions taken by the company have been similar. Additionally, it would be better understood if the symbolic factor is relevant to the study of social acceptability of wind farms or if it will be inherently connected to the impacts brought about by the endeavour.

## 7.5 Community Engagement

The expectation of the community was not only to have been engaged at some level, but also to have been acknowledged by developers. However, the desired engagement had limits: there were no claims for community ownership of any kind, which partly contradicts some of the existing literature. One argument that justifies this contradiction is that most of the literature regarding engagement and ownership focus on developed countries' context. (Haggett & Aitken, 2015; Munday et al., 2011; Schaefer et al., 2012; Warren & McFadyen, 2010). Developing countries have a different set of challenges (see section 2.2) that still obstructs ownership, thus making it less desirable. Additionally, in the case of Xavier, the community had no choice. Ownership has never entered the discussion and the community had to legally demand their rights. This context makes it more difficult to analyse if community ownership would affect social acceptability in Xavier.

Graham, Stephenson, and Smith (2009) found there is less opposition if the community is engaged; however, for companies, it is riskier to engage communities early in the process as the project can be rejected. In a wind farm development in Tasmania in Australia, community engagement actually increased conflict (Colvin et al., 2016). The Blueskin development project in the Otago region in New Zealand is another example of community engagement that did not improve social acceptability (Sinclair, 2017). In both examples, the communities have been engaged early on the process. It is unclear how Praia do Xavier would perceive engagement at this stage of the process, even though there is an overall feeling that they should have been engaged back in 2009.

### *7.5.1 Further Research on Community Engagement*

Future research would have to assess if a late engagement would mean higher levels of acceptability. Additionally, it is not clear if community engagement could replace their claims for compensation. Here it would be recommended that a choice experiment to measure the community's preferences be conducted. Participants could answer surveys that would evaluate their preferences in terms of engagement and compensation. Choice experiments have been used by

previous research regarding wind farms in Scandinavia (Ek & Persson, 2014; García et al., 2016) and could provide better insight to the context in Xavier.

## 7.6 Challenges and Limitations

Field research more often than not presents challenges and limitations (Wilson, Espiner, Stewart, & Purdie, 2014). This study was not different. Regarding the interviews, the low response rate of industry representatives (50%) can be explained by several factors. First, email might not be as effective as in person approaches. Second, the period available to perform the interviews in Brazil was limited. It comprised December and the time from February until the middle of March. Only one interview was done in December, as most companies had their schedule entirely taken by energy auctions during this month (EPE, 2017). The other two interviews were held in March. Because of the Carnival festivities in February, most companies have various holidays during this month for it is a national holiday and some companies do not operate for a whole week. A larger number of participants could have presented a clearer pattern and could have increased this research's reliability.

Due to the time constraint, one case study was a more viable option than comparative case studies. However, comparing Xavier to another community might have provided more reliable findings. Additionally, the time allocated for the field study (February) coincided with the beginning of the rainy season in the Ceará, which makes the access to communities in the region more difficult.

Another challenge concerned how to properly engage participants in the discussion. Due to the interaction with people from a different socioeconomic background, including the levels of illiteracy (24% of the population) (Mendes et al., 2016), it was necessary to be sensitive and adapt some of the vocabulary so that it would be easier for participants to understand and interact. Words such as "symbolism" and "perception" were replaced by "representation" and "point of view", respectively.

This change in the semantics also points out to the fact that wind energy literature as well as CT authors have a more erudite vocabulary, which can be explained by their western-centrism, usually focusing on developed countries (Boltanski & Thévenot, 1991; García et al., 2016; Latour, 1998; Redlinger et al., 2002). Additionally, little research on the social acceptability of wind farms has been conducted in vulnerable communities in the developing world (Pacheco, 2015; Porto et al., 2013). Therefore, applying their frameworks in such different contexts might render unusual results.

## 7.7 Conclusions

The social acceptability of wind farms has been a recurring issue in the literature. The community of Praia do Xavier has been involved in an ongoing conflict with the wind farm developer since 2009. Even though previous studies have investigated this community, this research aimed to understand how social acceptability could be increased by comparing the community's and developer's perceptions of wind energy. Additionally, the research sought to realise the value of symbolism to social acceptability. To analyse the data gathered, Convention Theory was used as well as the Devine-Wright (2005) categories to classify social perceptions of wind farms.

There were five research questions: first, could CT be relevant to the study of social acceptability of wind farms? After analysing the community's and the developers' discourses, the CT framework provided a clear understanding of how both parties justify the wind farm. The order of green worth was central to the communtity's discourse, while the order of market worth was the main convention used by developers. The order of civic worth, however, was found to be the shared common value between both groups. This has been the first research in Xavier in which dwellers have acknowledged the positive civic impacts brought about by the wind farm, such as the improved road access and the supply of free electricity. This points out to a shift of how the community represents the wind farm. Although negative environmental impacts are still relevant to the community, positive civic effects have been recognised. Therefore, the CT framework can provide new insights to the study of social acceptability of wind farms.

The second research question tried to answer how to reduce the conflict between community and wind farm developpers. As pointed out, civic mitigation measures have partially changed the perception of the community regarding the wind farm. Some of these measures, such as the basic food basket, have been demanded for the first time in Xavier. This indicates that an acceptable trade-off between the negative environmental effects and positive civic impacts is on the horizon. Therefore, the order of civic worth has the potential to reduce the conflict and increase social acceptability. However, dwellers must consider that these civic mitigation measures, such as gains in road connectivity, cannot replace environmental losses. Additional civic benefits cannot replace the loss of the lagoon and in biodiversity. For this reason, in the long term, it is uncertain if the trade-off between negative environmental impacts and positive civic measures will be sustainable.

The third research question tried to understand the impact symbolism could have on social acceptability. Because Praia do Xavier is considered a traditional community and their identity is attached to the environment they live in, there could have been symbolic factors affecting how the

community perceives the wind farm. Changes in the environment could have been directly associated with changes in their identity. Praia do Xavier's inhabitants, however, are experiencing the impacts themselves and the conceptualisation of symbolism brought to the community might have been an exceedingly abstract concept. Symbolic representations of the wind farm were still focused on the objective impacts brought about by the wind farm. This could be explained by the context in Praia do Xavier: initially the community had not been recognised or engaged by the developer due to cartographic and physical erasure techniques (Gorayeb et al., 2018). In addition, the community only received compensation after legal action was taken together with the public prosecutor (Gorayeb, Mendes, et al., 2016). The ongoing conflict that lasts for almost 10 years could have been a limitation to the concept of symbolism brought to the community. Therefore, the association between symbolism and social acceptability does not seem to be relevant in the community. Future research could determine if in another context symbolism might be relevant.

As for the wind energy representatives, even though different symbolic representations were obtained, their justifications relied mainly on economic factors. By analysing their discourses, it was possible to identify some shared concepts of what wind energy represented to them. All industry representatives had a more pragmatic view, highlighting the notion that the wind farm is a project, whereas in the community the wind farm had a less objective appeal as it generated more personal and passionate feelings. These divergent perspectives help answer the fourth question: if developers and community had different representations of wind power. Developers were asked about what wind energy represented to them, while the focus group participants had to draw their answers. There was not a consensus amongst the three industry representatives. One participant said it represented clean energy, the other one mentioned it was always represented under economic terms, while the final participant said it represented a good image for the company. These different views reflect the different experiences each participant had in their company, dealing with contrasting contexts and with a broad range of public acceptability. In the south of Brazil, for instance, it is more frequent for wind farms to be socially accepted for they are built on land used mainly for grazing (Bier, 2016; Bier & Verdum, 2015; Santos, 2014).

The community's representation was different. When asked to draw what wind energy represented to them, all groups emphasised the negative environmental impacts and the positive civic gains. In addition, the drawings showed that all groups featured the pre-eminence of the wind farm, highlighting the fact that it has become a part of their environment, together with the dunes and the lagoon. This shows that community and developers had different representations of wind energy.

Finally, could these representations be related to how both groups understand and justify wind farms? In the case of the community, their symbolic representations were a repetition of the arguments used to justify the wind farm. The replacement of the word 'symbolism' by the word 'representation' – as it would be easier for participants to understand the concept – probably had an influence on this result. Future research where two or more case studies are compared is recommended. Industry representatives, however, had contrasting results: market and civic justifications were predominant, while wind energy symbolic representations concerned not only economic aspects, but also the environment and the company's image. Some limitations might help explain why industry representatives had such divergent results. Due to schedule limitations and the holidays in Brazil, only three participants were recruited. The small sample meant it would be more difficult to establish a pattern.

After answering the research questions, the results were examined on a broader context. The CT framework as well as the Devine-Wright (2005) categories for classifying social perceptions of wind farms were used. The relevant findings were compared with the results from previous research. In respect of community engagement, this research found that there was a limit to the community's desire to be involved in the development of the wind farm. There were no intentions of community ownership, for instance. However, in the case of Xavier the community had no choice: ownership was never an option to the wind farm developers. This context makes it more difficult to analyse what would have been the impacts of community ownership to social acceptability and if they would be coherent with the findings from previous literature. It must be noted that most of the literature on community engagement of wind farms is focused on developed countries (Colvin et al., 2016; Stephenson & Lawson, 2013; Warren & McFadyen, 2010), in which local communities are often engaged in the decision-making, such as in Germany and Denmark (Fournis & Fortin, 2017). On the other hand, developing countries do not have this tradition. Companies avoid community engagement fearing the project might get rejected. Additionally, literature suggests that developing countries offer a riskier context for wind energy developers: a weak institutional and legal frameworks might hamper the chances of constructing wind farms and a lack of transparency may increase the likelihood of corruption (Redlinger et al., 2002).

The literature also suggests that the physical perception of wind farms is relevant to social acceptability (Redlinger et al., 2002) However, this investigation found the opposite. This means physical aspects of the wind turbines, such as its aesthetics and sound are not perceived by dwellers as a problem. Similarly, for the first time in Xavier, the proximity of the wind farm to the community – which is included in the contextual category of social perceptions of wind farms –

was not an issue, which means it is no longer relevant in that context. This evidences that discourses are in constant change in the community and they will continue to change over time, which is why future research will still be relevant in the community. Previous research has contributed to the study of social acceptability in Xavier; however, despite being relevant, their findings reflected a particular moment in time – and the same can be said about this research. Nonetheless, this study found that discourses are fluid and future research will have to understand this factor in order to realise how to voice the community's demands.

It would also be interesting to conduct additional studies regarding this wind farm. Future research could achieve a better understanding of how the discourses have been changing since 2009 and of the relevance of the order of civic worth in the surrounding communities. The results found in this research – such as the changing discourses, the order of civic worth as the shared common value between community and developers and the limitations involving community engagement – could have implications to other communities in the Northeast region of Brazil and, possibly, in other places in developing countries. Therefore, besides contributing to the study of social acceptability of the wind farm in Praia do Xavier, this research also provided further insight in the context and issues involved in the development of wind farms not only in Brazil's Northeast region, but also in developing countries.

# Appendix A - Quotes in Portuguese

## Chapter 5

### 5.2.1 Market

*Um produtor de leite disse que ele qualificou a produção depois do legado deixado pelo parquet eólico e pelos recursos que ficaram à disposição. Ele também voltou à escola. Em outro exemplo, teve uma pessoa que comprou uma moto, outra renovou a casa dela, ou construiu um banheiro e por aí vai. (Interviewee 3)*

*Tem mais benefícios locais, tanto na fase de desenvolvimento quanto na de operação. Isso quer dizer que gera negócios, atrai investidores, sabe? E assim por diante. E tem também os benefícios econômicos da fase de construção. Se você precisa de trabalho manual, você contrata os locais, então isso aumenta a renda. (Interviewee 1)*

*Tem os benefícios para a economia local, por exemplo a melhora da renda. Novos negócios aparecem e daí você tem maior competitividade e uma melhora geral do comércio. As pessoas começam a gastar mais porque estão ganhando mais. (Interviewee 2)*

*Tem alguns impactos. Sobre a economia local, se você tem que alimentar 500 trabalhadores, claro que isso vai atrair vários negócios de marmita, mas qual empresa de marmita você vai escolher para alimentar a galera? A do Sr. José da esquina ou a do Sr. Manuel? Talvez você escolha o primeiro, mas o outro cara é o cara que mais tem poder na comunidade, sabe? Daí ele vai falar para todo mundo que o seu projeto não é bom para a comunidade e as pessoas vão acreditar nele, claro. (Interviewee 2)*

*Novos negócios chegam, né? Mas vem todo tipo de negócio. Então, de repente tem uma oferta de todo tipo de serviço. Porque os trabalhadores vem de outras regiões também, então você cria um aumento na demanda por todos os serviços, inclusive prostituição. Isso leva a um aumento no número de bordeis, seguido pelo aumento de DST. (Interviewee 2)*

### 5.2.2 Civic

*Tinham alguns impactos negativos pequenos. A questão da infraestrutura: as ruas eram muito pequenas para transportar as pás, então rotas alternativas tiveram que ser feitas, muitas vezes construção de vias. Isso geralmente perturbava a população, o barulho, o trabalho nas estradas. Com certeza a infraestrutura era uma questão. (Interviewee 1)*

*O acesso para a comunidade melhorou: estradas melhores, infraestrutura melhor. Mas tiveram impactos também, que foram se acumulando. A necessidade de estradas melhores e maiores para transportar as pás, também precisavam de caminhões maiores. Isso levou a maiores quantidades de poeira no ar, ocasionando impactos na saúde: problemas respiratórios na comunidade aumentaram. Daí qual a solução? Jogar água na estrada para assentar a terra, mas aí é uma região que sofre com a falta de água e você ta desperdiçando água na estrada. Então, tem outros problemas que surgem.* (Interviewee 2)

*Aqui melhorou um pouco. Porque nós andava pela rampa. Eles deram acesso pra gente andar, né? Porque a gente já tava velho, pagando caro. Hoje tem horário, deixa nós ali. Aí, melhorou. Um pouco. Naqueles tempos era uma dificuldade muito grande [...] tem o acesso que ta liberado pra educação, pra saúde. Porque antes pra se consultar precisava ir a Amarelas, passar pelas dunas. E hoje não, graças a Deus ta melhor.* (Focus Group Participant 1).

*Positivo só mesmo o acesso que ta livre pra gente andar, né? Somente. Porque no dia que a gente vai pedir, mandar uma pessoa lá na empresa [...] ou levar uma pessoa doente, tudo bem.* (Focus Group Participant 3)

### 5.2.3 Domestic

*Então, isso é uma coisa muito importante e que o pessoal geralmente esquece: a gente tem que considerar a dinâmica da comunidade. Ainda mais numa cidadezinha de interior. Depende muito do discurso e de como você se articula. [...] Se a empresa pegar a pessoa mais extrovertida, cheia de confiança pra ser do time dela, ela já tem metade da comunidade do lado dela.* (Interviewee 2)

*Eles cavam muito ali, a terra, e enterra o rio. O rio ta sequinho. Aí eles disseram que vinham aqui fazer reunião pra falar disso [...] e nós aqui que mora aqui, toda reunião a gente fala isso, aí as comunidades, tem Tapuiu, Nova Rio, Araras, niguém faz coisa com coisa*. (Focus Group Participant 7)

*Outras comunidades, eles não, preferiam que ninguém entrasse aqui dentro em Xavier, só mesmo a comunidade de Xavier. Isso ficou difícil, foi muito conflito. Pessoal de outras comunidades, eles até ameaçaram se não entrassem ia ter briga. E aquela coisa, cê sabe como começam esses conflitos, né? Então isso foi numa audiência [...] veio duas pessoas de Amarelas, era pra vir de todas as comunidades, não veio.* (Focus Group Participant 3)

### 5.2.4 Environmental

*Trabalhando com sustentabilidade, o pessoal fica mais orgulhoso, eu vi muito disso.* (Interviewee 1)

*Mais importante, você tem o aspecto ecológico também. É assim que a gente enxerga […] é uma energia limpa e isso tem um impacto positivo na vida das pessoas.* (Interviewee 3)

A *empresa fez medidas mitigatórias, teve por exemplo um programa de educação ambiental. Era um programa bem bacana.* (Interviewee 2)

*No rio ali, cê passa de um lado pro outro a pé, rasinho. E antigamente não era assim não, era fundo. Tenho certeza que se tivesse um estudo sobre a terra ali, com certeza que ia dar que é a eólica que faz a maior parte do impacto do rio.* (Focus Group Participant 7)

*A primeira torre aqui, as tartarugas desovavam, e era maçarica, né? Muitos pássaros vinham, e acabou. Mexeu muito com o meio ambiente. Aí a fundação [...] é 20 metros de fundura as bases, tendeu? Mexeu bastante a terra e, como ele falou, não tem mais peixe pra comer.* (Focus Group Participant 8)

*Veio uma menina lá na casa do pai falar sobre o meio ambiente. Eles são só contratados pra pesquisar o morcego que morre sobre as torres aí. Aí perguntei se já encontraram morto, aí disse que já. É morcego, é urubu e outros pássaros que vêm do mar e encontra a eólica e morre.* (Focus Group Participant 7)

*A lagoa tá destruída. […] Dali que era para tirar o sustento nosso, pra tirar o peixinho de lá, e agora acabou-se.* (Focus Group Participant 2)

*A lagoa ta seca. Mil metros quadrados a lagoa. Ta seca a lagoa. Pescando no mar agora.* (Focus Group Participant 3)

*Na reunião, (eles disseram) que eles querem fazer um projeto aqui sobre o lixo, né? […] reciclagem, isso é muito bom, porque a gente não tem onde botar o lixo, né?* (Focus Group Participant 7)

*Sobre meio ambiente, a gente, quando a mare ta cheia, pela aquela torre lá, aquela coisa, amarela de ácido, isso é da torre, das bases, eles tem muito produto químico [...] cada, vamos supor, 50 metros cúbicos de concreto, eles trabalhavam com 30, 50 toneladas de gelo, fora os produtos químicos que tinham. Muito mesmo, muito.* (Focus Group Participant 10)

## 5.4 Symbolic Representations

*Energia eólica é vista como algo vantajoso. Tem um certo destaque. É muito bem vista e avaliada. A imagem é um fator importante também.* (Interviewee 1)

*Bom, os parques eólicos são representados em termos econômicos, ou seja, a viabilidade econômica do projeto é essencial. Claro que tem o argumento ambiental, mas nada é feito sem a viabilidade econômica.* (Interviewee 2)

*Energia eólica é o nosso principal destaque. É uma grande parte do nosso grupo. Energia renovável tem uma grande importância e esse tipo de energia está com um bom e constante crescimento, mas mais importante você tem o aspecto ecológico também. É assim que a gente enxerga.* (Interviewee 3)

*Para os clients também, ter um portfolio com uma diversidade de projetos de energia é positivo para a sua imagem.* (Interviewee 1)

*Nada é feito sem a viabilidade econômica.* (Interviewee 2)

*Um dos pontos mais fortes é que a energia distribuída está ligada aos pontos de consumo […] é possível ter uma maior compatibilidade de custo e agregar força.* (Interviewee 3)

*Em termos de impacto social, a gente quer olhar pelo lado financeiro também: saber o quanto ela impacta financeiramente? Qual o impacto gerado? A gente tá tentando quantificar esse impacto. É importante saber para que a gente possa implantar novos projetos.* (Interviewee 3)

## 5.5 Results' Analysis

*Mas o pessoal lá (de outras comunidades) reclama? Não. As de lá reclamam? Não. O pessoal da ilha reclama? Não. Arara reclama? Não. Só Xavier? (Focus Group Participant 2)*

*O parque eólico aqui, a empresa era pra vir se comunicar coma comunidade, (mas) eles fizeram uma coisa errada, porque quando eles botaram no mapa com o Governo Federal, eles botaram como se fosse uma terra alagada, que não morava ninguém. Aqui não foi ninguém empregado nesse parque eólico.* (Focus Group Participant 3)

*Mas no começo eu não achava bom não. Porque eles mandava a gente descer. Pode descer, pode sair daqui, a gente não quer você aqui não. E nós tinha que descer porque não era nosso, né?* (Focus Group Participant 1)

*Tava Terramar, tava Ibama, e os Direitos Humanos. A Universidade Federal, tava na época também, acompanhando a gente e a Pastoral Social. Então, todas essas lideranças que vem acompanhando a gente, hoje é que tem esse prédio aqui, essas casinhas. (Focus Group Participant 3).*

# Chapter 6

## 6.2 Physical

*Aí a fundação que ta aí é 20 metros de fundura as bases, tendeu?* (Focus Group Participant 8)

*Sobre o impacto visual, isso depende da pessoa, como ela vê, se positivo ou negativo. Mas é interessante que as pessoas muitas vezes não gostavam quando a pá não girava [...] Tem o barulho também, que eu não sei se incomoda tanto.* (Interviewee 1)

*Não teve impacto visual. O parque era visto como bonitinho, legal. Sem queixas do barulho ou da estética.* (Interviewee 2)

## 6.3 Political & Institutional

*Um dos pontos mais fortes é que a energia distribuída está ligada aos pontos de consumo. Isso é diferente do que normalmente ocorre no Brasil.* (Interviewee 3).

*Teve pouca participação da comunidade antes. Hoje, o gasto com a comunidade aumentou, e também o engajamento dela.* (Interviewee 1)

## 6.5 Contextual

*Atrapalha a vista, interrompe a passage da população.* (Interviewee 1)

*O morro, a duna eles tão mudando de um lado pro outro. Aí o morro de lá tá mudando pra estrada, eles tão passando pro outro lado e o morro vai sobrar. Daqui a 50 anos não existe mais Barroquinha não.* (Focus Group Participant 8)

*Eles passaram a estrada no meio das dunas, daí derrubou árvore, secou a lagoa.* (Pink Group).

## 6.6 Local

*A gente tem na verdade um planejamento satélite que está ligado aos processos implantados. Daí a gente tem contato com algumas pessoas e como elas foram afetadas [...] tem um impacto positivo na vida das pessoas. A gente quer mostrar a mudança nesse micro-cosmos.* (Interviewee 3)

*Tem qualidade também. Trouxe casa, né? Trouxe acesso pra Camocim […] que é melhor, a estrada.* (Focus Group Participant 10)

*Tem o relatório que vai pro mundo inteiro dizendo que ta beneficiando as comunidades carentes e aqui não ta acontecendo nada disso. Então […] outras pessoas que vem aqui dizendo que isso vai acontecer e até agora nada.* (Focus Group Participant 3)

## 6.7 Additional Results

*Eles deram acesso pra gente andar.* (Focus Group Participant 1)

*Eles fizeram uma coia ruim, porque quando botaram no mapa com o Governo Federal, eles botaram [...] que ninguém morava aqui.* (Focus Group Participant 3)

*A lagoa que eles destruíram.* (Focus Group Participant 13)

*Eles cavaram muito e enterraram o rio*. (Focus Group Participant 7)

*Eles mexeram muito com o meio ambiente.* (Focus Group Participant 8)

*A gente tem energia solar também, em larga escala.* (Interviewee 3)

*O projeto Raízes explica muito sobre as ações que a gente faz nas comunidades.* (Interviewee 3)

*Os resultados são promissores. Nós temos um planejamento satélite relacionado aos processos implantados.* (Interviewee 3)

*Não só a gente levou recursos financeiros, mas também educação, conhecimento. (Interviewee 3)*

*A gente tem que considerar a dinâmica da comunidade.* (Interviewee 2)

*Então às vezes as pás eram acionadas pra girar fora do horário de vento porque a população queria ver as pás rodando. Daí, desperdiçando energia.* (Interviewee 1)

# Chapter 7

## 7.2 The Order of Green Worth

> *Mas as pessoas ali [das outras comunidades], eles reclamam? Não. O pessoal do lado de lá [outras comunidades] reclama? Não. Na ilha reclamam? Não Arara reclama? Não. Só Xavier reclama?* (Focus Group Participant 2)

# Appendix B

# Research Information Sheet - Interview

**Lincoln University**

***Faculty of Environment, Society and Design***

**Research Information Sheet (Interview)**

I would like to invite you to participate in a project entitled Wind energy representations: From social conflict to acceptability.

The aim of this project is to understand if different perceptions of wind energy can influence social acceptability. The research is part of my Masters in Applied Science. The project is being funded by the Faculty of Environment, Society and Design from Lincoln University, and by NZ Aid.

Your participation will require you to participate in an interview which will take from 20 to 30 minutes of your time.

Your participation in this research is voluntary and you may decline to answer any question during the discussion. You may withdraw from the project, including withdrawing any information you have provided, up to June 10th 2018 by contacting me (Victor Pitanga) through the contact details below. The overall results, which will be shared with the community, will be part of my thesis, which will be finished by August 15th 2018.

With your permission, the interview will be audio recorded to facilitate the analysis of the information gathered. The recording will be confidential. Only my supervisors (Dr. Shannon Page and Dr. Christopher Rosin) and I will have access to the data provided and we guarantee its confidentiality and your anonymity. You will have the chance to listen to the recording or read the notes taken in case you want to amend what you have said or exclude any statement from the study.

Additionally, this research has been reviewed and approved by the Lincoln University Human Ethics Committee.

Thank you for your help and for being a part of this project.

*Researcher: Victor Pitanga, Master in Applied Science*
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*Ph 0204 1033 806*

*My supervisor: Dr. Shannon Page, Faculty of Environment, Society and Design*
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**Lincoln University**

***Faculdade de Meio-Ambiente, Sociedade e Design***

**Informação à Pesquisa (Entrevista)**

Eu gostaria de convidá-lo(a) para fazer parte do projeto intitulado: Representações da energia eólica: Do conflito à aceitação social.

O objetivo deste projeto é entender se as diferentes percepções acerca da energia eólica podem influenciar a aceitação social. Esta pesquisa é parte do Mestrado em Ciências Aplicadas. O projeto está sendo financiado pela Lincoln University e pelo governo da Nova Zelândia.

A sua participação é de extrema importância: apenas fazer parte de uma entrevista que tomará entre 20 a 30 minutos do seu tempo.

A sua participação é voluntária e você pode se recusar a responder qualquer pergunta durante a discussão. Você pode se retirar do projeto, inclusive quaisquer informações fornecidas ao pesquisador, até o dia 10 de Junto de 2018. Basta entrar em contato comigo (Victor Pitanga) por meio do contato abaixo. Os resultados gerais, que serão compartilhados com a comunidade, são parte da minha tese, que será finalizada no 15 de Agosto de 2018.

Com a sua permissão, a entrevista será gravada por áudio para facilitar a análise dos dados coletados. A gravação será confidencial. Apenas os meus supervisores (Dr. Shannon Page e Dr. Christopher Rosin) e eu teremos acesso às informações fornecidas por você. Garantimos a confidencialidade dessas informações assim como o seu anonimato. Você terá a chance de escutar a gravação ou ler as notas tomadas caso deseje alterar algo que disse ou excluir qualquer declaração da pesquisa.

Além disso, esta pesquisa foi revisada e aprovada pelo Comitê Ético da Lincoln University na Nova Zelândia.

Obrigado pela ajuda e por ser parte desse projeto.

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*Meu supervisor: Dr. Shannon Page, Faculdade de Meio-Ambiente, Sociedade e Design*

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# Appendix C

# Research Information Sheet – Focus Group

**Lincoln University**

***Faculty of Environment, Society and Design***

**Research Information Sheet (Focus Group)**

I would like to invite you to participate in a project entitled Wind energy representations: From social conflict to acceptability.

The aim of this project is to understand if different perceptions of wind energy can influence social acceptability. The research is part of my Masters in Applied Science. The project is being funded by the Faculty of Environment, Society and Design from Lincoln University, and NZ Aid.

Your participation will require you to participate in a focus group which will take from 45 to 60 minutes of your time. All the information shared in the focus group must remain confidential.

Anybody above 18 years old, male or female, is a potential participant – as long as you do not have any political affiliation.

Your participation in this research is voluntary and you may decline to answer any question during the discussion. You may withdraw from the project, including withdrawing any information you have provided, up to June 10th 2018 by contacting me (Victor Pitanga) through the contact details below. The overall results, which will be shared with the community, will be part of my thesis, which will be finished by August 15th 2018.

With your permission, the focus group will be audio recorded. The recording will be confidential. Only my supervisors (Dr. Shannon Page and Dr. Christopher Rosin) and I will have access to the data provided and we guarantee its confidentiality and your anonymity. You will have the chance to listen to the recording or read the notes taken in case you want to amend what you have said or exclude any statement from the study.

You may be invited to participate in additional one-on-one interviews scheduled after the focus group to improve the quality of the data collected.

This research has been reviewed and approved by the Lincoln University Human Ethics Committee.

Thank you for your help and for being a part of this project.

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**Lincoln University**

***Faculdade de Meio-Ambiente, Sociedade e Design***

**Informação à Pesquisa (Grupo Focal)**

Eu gostaria de convidá-lo(a) para fazer parte do projeto intitulado: Representações da energia eólica: Do conflito à aceitação social.

O objetivo deste projeto é entender se as diferentes percepções acerca da energia eólica podem influenciar a aceitação social. Esta pesquisa é parte do Mestrado em Ciências Aplicadas. O projeto está sendo financiado pela Lincoln University e pelo governo da Nova Zelândia.

A sua participação é de extrema importância: apenas fazer parte de um grupo de discussões que tomará entre 45 a 60 minutos do seu tempo. Toda informação compartilhada no grupo focal deve permanecer confidencial.
Todas as pessoas maiores de 18 anos, homens e mulheres, podem participar – contanto que não haja nenhum filiamento político.

A sua participação é voluntária e você pode se recusar a responder qualquer pergunta durante a discussão. Você pode se retirar do projeto, inclusive quaisquer informações fornecidas ao pesquisador, até o dia 10 de Junto de 2018. Basta entrar em contato comigo (Victor Pitanga) por meio do contato abaixo. Os resultados gerais, que serão compartilhados com a comunidade, são parte da minha tese, que será finalizada no 15 de Agosto de 2018.

Com asua permissão, a dinâmica de grupo será gravada por áudio. A gravação será confidencial. Apenas os meus supervisores (Dr. Shannon Page e Dr. Christopher Rosin) e eu teremos acesso às informações fornecidas por você. Garantimos a confidencialidade dessas informações assim como o seu anonimato. Você terá a chance de escutar a gravação ou ler as notas tomadas caso eu deseje alterar algo que disse ou excluir qualquer declaração da pesquisa.

Você poderá ser convidado a participar de entrevistas individuais adicionais após o grupo focal para aprimorar a qualidade dos dados coletados.

Além disso, esta pesquisa foi revisada e aprovada pelo Comitê Ético da Lincoln University.

Obrigado pela ajuda e por ser parte desse projeto.

*Pesquisador: Victor Pitanga, Mestrado em Ciência Aplicada*
*victor.pitanga@lincolnuni.ac.nz*
*Tel 021 996 933 471*

*Meu supervisor: Dr. Shannon Page, Faculdade de Meio-Ambiente, Sociedade e Design*
shannon.page@lincoln.ac.nz
*Tel 03 325 3820*

*Meu supervisor: Dr. Christopher Rosin, Faculdade de Meio-Ambiente, Sociedade e Design*
*christopher.rosin@lincoln.ac.nz*
*Tel 03 325 3820*

# Appendix D

## Consent Form - Interview

***Name of Project: Wind energy perceptions: The relevance of symbolism to social acceptability***

I have read and understood the description of the above-named project. On this basis, I agree to participate in the project, and I consent to publication of the results of the project with the understanding that anonymity will be preserved. I understand also that I may withdraw from the project, including withdrawal of any information I have provided, up to June 10th of 2018.

Regarding the audio recording of the interview, I declare that:

- ☐ I consent to having an audio recording made of my interview.
- ☐ I do not consent to having an audio recording made of my interview, but agree to notes being made.

I understand I will have the chance to listen to my recording or read the notes taken in case I want to amend what I have said or exclude any statement from the study.

Name:

_____

Signed: _____ Date: _____

**Formulário de Consentimento (Entrevista)**

***Nome do Projeto: Percepções da energia eólica: A relevância do simbolismo à aceitação social***

Eu declaro que entendi a descrição do projeto acima. Dessa forma, aceito participar do grupo focal e concordo com a publicação dos resultados do projeto com o entendimento que o anonimato dos participantes será preservado. Entendo que eu posso me retirar do projeto, incluindo quaisquer informações dadas por mim, até o dia 10 de Junho de 2018.

Em relação à gravação em áudio da entrevista, declaro que:

- ☐ Eu dou consentimento à gravação em áudio feita na entrevista.
- ☐ Eu não dou consentimento à minha gravação em áudio feita na entrevista, mas concordo que tomem notas das minhas declarações.

Eu entendo que terei a chance the escutar a gravação ou ler as notas tomadas caso eu deseje alterar algo que disse ou excluir qualquer declaração da pesquisa.

Nome:

_____

Assinatura: _____ Data: _____

# Appendix E

## Consent Form – Focus Group

***Name of Project: Wind energy perceptions: The relevance of symbolism to social acceptability***

I have read and understood the description of the above-named project. On this basis, I agree to participate in the project, and I consent to publication of the results of the project with the understanding that anonymity will be preserved. I understand also that I may withdraw from the project, including withdrawal of any information I have provided, up to June 10th of 2018.

Regarding the audio recording of the focus group, I declare that:

- ☐ I consent to having an audio recording made of my focus group.
- ☐ I do not consent to having an audio recording made of my focus group, but agree to notes being made.

I understand I will have the chance to listen to my recording or read the notes taken in case I want to amend what I have said or exclude any statement from the study.

I will also respect the privacy of information given to me by others participating in the focus group and will not discuss the information they have provided, with other people outside of the focus group.

I understand that I may be asked to participate in additional interview after the conclusion of the focus group, therefore:

- ☐ I agree to participate in this potential interview.
- ☐ I do not agree to participate in this potential interview.

Name:

_____

Signed: _____ Date: _____

**Formulário de Consentimento (Grupo Focal)**

***Nome do Projeto: Percepções da energia eólica: A relevância do simbolismo à aceitação social***

Eu declaro que entendi a descrição do projeto acima. Dessa forma, aceito participar do grupo focal e concordo com a publicação dos resultados do projeto com o entendimento que o anonimato dos participantes será preservado. Entendo que eu posso me retirar do projeto, incluindo quaisquer informações dadas por mim, até o dia 10 de Junho de 2018.

Em relação à gravação em áudio do grupo focal, declaro que:

- ☐ Eu dou consentimento à gravação em áudio feita no grupo focal.
- ☐ Eu não dou consentimento à minha gravação em áudio feita no grupo focal, mas concordo que tomem notas das minhas declarações.

Eu entendo que terei a chance the escutar a gravação ou ler as notas tomadas caso eu deseje alterar algo que disse ou excluir qualquer declaração da pesquisa.

Eu também irei respeitar a privacidade das informações compartilhadas pelos outros participantes do grupo focal e concordo em não discutir tais informações com pessoas fora do grupo focal.

Eu entendo que uma entrevista adicional pode ser pedida a mim após a conclusão do grupo focal, portanto:

- ☐ Eu concordo em participar desta possível entrevista adicional.
- ☐ Eu não concordo em participar desta possível entrevista adicional.

Nome:

_____

Assinatura: _____ Data: _____

# Appendix F

## Support Letter sent to Interview Participants

Department of Environmental Management
Department of Tourism, Sport and Society
Faculty of Environment, Society and Design

T 64 3 423 0818
PO Box 85084, Lincoln University
Lincoln 7647, Christchurch, New Zealand

www.lincoln.ac.nz

9 November 2017

To whom it may concern:

Please accept this letter as confirmation that Victor Pitanga is a masters candidate of good standing at Lincoln University in New Zealand. Victor has demonstrated his capacity to conduct scholarly research in an objective manner through the research proposal process in the Masters of Applied Science programme. His research methods have also been approved by the Lincoln University Human Ethics Committee. He will receive active academic and research support from Dr Shannon Page and Dr Christopher Rosin who are his thesis supervisors.

We request that you contribute to Victor's research as summarised in his information sheet. Thank you very much for participating in and supporting his project.

Sincerely,

Dr. Shannon Page
Lecturer
Department of Environmental Management
Lincoln University
email: Shannon.Page@lincoln.zc.nz

Dr. Christopher Rosin
Senior Lecturer
Department of Tourism, Sport and Society
Lincoln University
email: Christopher.Rosin@lincoln.ac.nz

# Appendix G

# Lincoln Human Ethics Committee Approval

4 December 2017

**Application No: 2017-53**

**Title:** Wind energy perceptions: The relevance of symbolism to social acceptability

**Applicant:** V Ferreira

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*The Lincoln University Human Ethics Committee has reviewed the above noted application.*
Thank you for your response to the questions which were forwarded to you on the Committee's behalf.

I am satisfied on the Committee's behalf that the issues of concern have been satisfactorily addressed. I am pleased to give final approval to your project.

I am pleased to give final approval to your project subject to some minor changes to your suggested wording in the Research Information Sheets for the focus groups and interviews.

- Please include the fact you will be seeking consent for audio recording (For example, "With your permission, the focus group/interview will be audio recorded. The recording will be confidential", or "I am seeking permission to audio record the focus group/interview …".)

- Include a statement about the optional task related to checking recordings/notes – e.g. "You will have the chance to listen to the recording or read the notes taken in case you want to amend what you have said or exclude any statement from the study."

- Please add "reviewed" to the statement re the HEC – i.e. "This research has been reviewed and approved by the Lincoln University Human Ethics Committee."

I also suggest that your remove the phrase "and is mandatory" from the sentence beginning "The research is part …" as it is not necessary to include this (and there is the possibility, albeit remote, it might be interpreted as relating to the task you are seeking consent for).

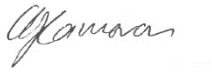
Could you please provide Alison Hind with a final copy of the two Research Information Sheets?

Please note that this approval is valid for three years from today's date at which time you will need to reapply for renewal.

Once your field work has finished can you please advise the Human Ethics Secretary, Alison Hind, and confirm that you have complied with the terms of the ethical approval.

May I, on behalf of the Committee, wish you success in your research.

Yours sincerely



Caitriona Cameron
Acting Chair, Human Ethics Committee

**PLEASE NOTE:** The Human Ethics Committee has an audit process in place for applications. Please see 7.3 of the Human Ethics Committee Operating Procedures (ACHE) in the Lincoln University Policies and Procedures Manual for more information.

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